5 Choosing which impact categories and indicators to assess

This chapter outlines sustainable development impact categories that users can assess and assists users in determining which impact categories to assess for their policy. In this chapter, users also identify indicators for each included impact category that will be used in subsequent chapters.

Checklist of key recommendations

- Include all sustainable development impact categories in the assessment that are expected to be (1) relevant (based on the objectives of the assessment, national or local policy objectives, sustainable development goals and priorities, local circumstances, and stakeholder priorities) and (2) significantly affected by the policy (either positively or negatively)
- Consult stakeholders when choosing which impact categories to assess

5.1 Choose which impact categories to include in the assessment

Users can assess a wide variety of sustainable development impact categories across the three dimensions of environmental, social and economic impacts. Examples of impacts are improved health from reduced air pollution, job creation, poverty reduction, increased energy access, and gender equality. This section provides examples of impact categories, and guidance on choosing which impact categories to assess.

The policy being assessed is likely to have positive impacts on some impact categories and negative impacts on others. Users should choose a comprehensive set of impact categories that are relevant to the assessment. In subsequent chapters, users determine how the policy affects each impact category. In Chapter 14, users evaluate potential synergies and trade-offs between the selected impact categories to inform decision-making.
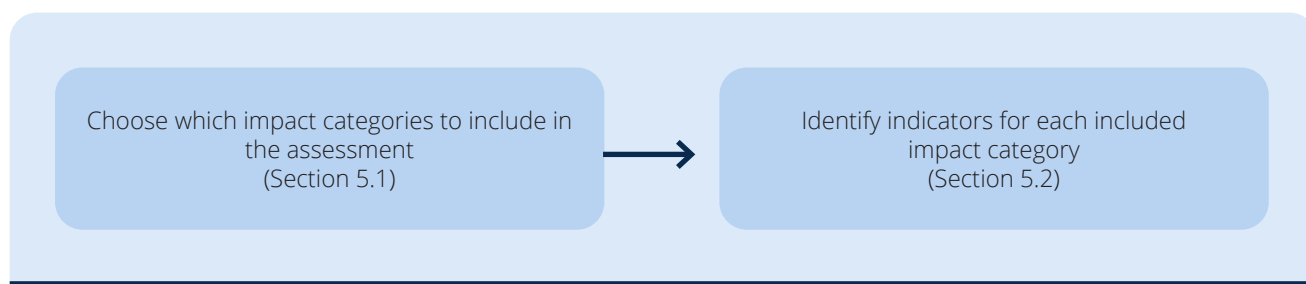
5.1.1 Examples of impact categories

Table 5.1 lists examples of impact categories that can be assessed. Users should review the list of examples with their policy in mind to identify which impact categories may be relevant or significant for their assessment. Users should first consider a wide set of impact categories in this step, then determine which of them are both relevant and significant in Section 5.1.2.

The list is illustrative, rather than comprehensive or prescriptive. Users can choose a subset of impact categories from this list or use the list as a starting point to prepare a list that best meets their needs. In consultation with stakeholders, users should brainstorm to identify additional impact categories not included in the list that may be relevant or significant.

FIGURE **5.1**

Overview of steps in the chapter

Choose which impact categories to include in the assessment
(Section 5.1)

Identify indicators for each included impact category
(Section 5.2)

In Table 5.1, impact categories are organized into groups to help with navigation. The names of impact categories, and their classification into different dimensions and groups, are suggestions and can be adapted by users. Some impact categories blur the line between the social, economic and environmental dimensions, and could reasonably appear under more than one dimension. For example, poverty and jobs could be considered either social or economic impacts.

See Box 5.1 for an explanation of the relationship of the list of impact categories to the United Nations SDGs.

TABLE **5.1**

Examples of impact categories

Dimension	Groups of impact categories	Impact categories
Environmental impacts	Air	• Climate change mitigation (SDG 13) • Ozone depletion • Air quality and health impacts of air pollution (SDGs 3, 11, 12) • Visibility • Odours
	Water	• Availability of fresh water (SDG 6) • Water quality (SDGs 6, 14) • Biodiversity of freshwater and coastal ecosystems (SDGs 6, 14) • Fish stocks sustainability (SDG 14)
	Land	• Biodiversity of terrestrial ecosystems (SDG 15) • Land-use change, including deforestation, forest degradation and desertification (SDG 15) • Soil quality (SDG 2)
	Waste	• Waste generation and disposal (SDG 12) • Treatment of solid waste and wastewater (SDG 6)
	Other/cross-cutting	• Resilience of ecosystems to climate change (SDG 13) • Adverse effects of climate change (SDG 13) • Energy (SDG 7) • Depletion of non-renewable resources (SDG 12) • Material intensity (SDG 12) • Toxic chemicals released to air, water and soil • Genetic diversity and fair use of genetic resources (SDGs 2, 15) • Terrestrial and water acidification (SDG 14) • Infrastructure damage from acid gases and acid deposition • Loss of ecosystem services from air pollution • Nuclear radiation • Noise pollution • Aesthetic impacts

TABLE 5.1, continued

Examples of impact categories

Dimension	Groups of impact categories	Impact categories
Social impacts	Health and well-being	• Accessibility and quality of health care (SDG 3) • Hunger, nutrition and food security (SDG 2) • Illness and death (SDG 3) • Access to safe drinking water (SDG 6) • Access to adequate sanitation (SDG 6) • Access to clean, reliable and affordable energy (SDG 7) • Access to land (SDG 2) • Standard of living • Quality of life and well-being (SDG 3)
	Education and culture	• Accessibility and quality of education (SDG 4) • Capacity, skills and knowledge development (SDGs 4, 12) • Climate change education, public awareness, capacity-building and research • Preservation of local and indigenous culture and heritage (SDG 11)
	Institutions and laws	• Quality of institutions (SDG 10) • Corruption, bribery and rule of law (SDG 16) • Public participation in policymaking processes • Access to information and public awareness (SDG 12) • Compensation for victims of pollution • Access to administrative and judicial remedies (SDG 16) • Protection of environmental defenders • Freedom of expression
	Welfare and equality	• Poverty reduction (SDG 1) • Economic inequality (SDGs 8, 10) • Equality of opportunities and equality of outcomes (SDG 10) • Protection of poor and negatively affected communities (SDG 12) • Removal of social disparities • Climate justice and distribution of climate impacts on different groups • Gender equality and empowerment of women (SDG 5) • Racial equality • Indigenous rights • Youth participation and intergenerational equity • Income of small-scale food producers (SDG 2) • Migration and mobility of people (SDG 10)
	Labour conditions	• Labour rights (SDG 8) • Quality of jobs (SDG 8) • Fairness of wages (SDG 8) • Quality and safety of working conditions (SDG 8) • Freedom of association (SDG 8) • Just transition of the workforce (SDG 8) • Prevention of child exploitation and child labour (SDGs 8, 16) • Prevention of forced labour and human trafficking (SDG 8)

TABLE 5.1, continued

Examples of impact categories

Dimension	Groups of impact categories	Impact categories
Social impacts, continued	Communities	• City and community climate resilience (SDG 11) • Mobility (SDG 11) • Traffic congestion (SDG 11) • Walkability of communities (SDG 11) • Road safety (SDGs 3, 11) • Community/rural development • Accessibility and quality of housing (SDG 11)
	Peace and security	• Resilience to dangerous climate change and extreme weather events (SDG 13) • Security (SDG 16) • Maintaining global peace (SDG 16)
Economic impacts	Overall economic activity	• Economic activity (SDG 8) • Economic productivity (SDGs 2, 8) • Economic diversification (SDG 8) • Decoupling economic growth from environmental degradation (SDG 8)
	Employment	• Jobs (SDG 8) • Wages (SDG 8) • Worker productivity
	Business and technology	• New business opportunities (SDG 8) • Growth of new sustainable industries (SDGs 7, 17) • Innovation (SDGs 8, 9) • Competitiveness of domestic industry in global markets • Agricultural productivity and sustainability (SDG 2) • Economic development from tourism and ecotourism (SDG 8) • Transportation supply chains • Infrastructure creation, improvement and depreciation
	Income, prices and costs	• Income (SDG 10) • Prices of goods and services • Costs and cost savings • Inflation • Market distortions (SDG 12) • Internalization of environmental costs/externalities • Loss and damage associated with environmental impacts (SDG 11) • Cost of policy implementation and cost-effectiveness of policies
	Trade and balance of payments	• Balance of payments • Balance of trade (imports and exports) • Foreign exchange • Government budget surplus/deficit • Energy independence, security or sovereignty • Global economic partnership

BOX **5.1**

Relationship to the United Nations Sustainable Development Goals

This methodology is intended to be consistent with the SDGs, to help countries assess the impacts of policies in contributing to achieving the SDGs. The 17 SDGs, outlined in Figure 5.2, and the associated 169 targets are framed as aspirations or desired outcomes rather than as a neutral list of impact categories. Table 5.1 adapts many of the SDG goals and targets so that impact categories are expressed in neutral terms, to allow users to assess positive or negative impacts on each impact category. To keep Table 5.1 relatively comprehensive, yet still concise and user-friendly, not all 169 SDG targets are reflected in the table, and certain impact categories were merged. The SDG(s) most directly relevant to each impact category is indicated in parentheses in the table. For some impact categories, there is no directly associated SDG, so not every impact category indicates an associated SDG. Users should refer to the full list of SDG goals, targets and indicators for more information when deciding which impact categories to assess.[14]

Other sources were also reviewed when developing the list of impact categories.[15]

FIGURE **5.2**

The Sustainable Development Goals

5.1.2 Choosing which impact categories to assess

Choosing which impact categories to assess is one of the most important steps in the assessment process. To ensure a complete and relevant assessment of the impacts resulting from a policy, users should choose which impact categories to assess based on their:

- significance

- relevance.

It is a *key recommendation* to include all sustainable development impact categories in the assessment that are expected to be (1) relevant (based on the objectives of the assessment, national or local policy objectives, sustainable development goals and priorities, local circumstances, and stakeholder priorities) and (2) significantly affected by the policy (either positively or negatively). It is also a *key recommendation* to consult stakeholders when choosing which impact categories to assess.

The choice should be made in a principled, transparent and participatory way, in the context of the user's objectives and the needs of stakeholders. Selecting too few impact categories may not provide an adequate reflection of a policy's full impact, whereas selecting too many could make the process burdensome. Selecting only impact categories that are expected to show positive impacts would lead to an incomplete and biased assessment, as would only selecting impact categories that are expected to show negative impacts.

When choosing impact categories to include in the assessment, users should be aware that sustainable development impact categories are linked and interrelated. For example, gender equality and empowerment of women is intertwined with many other impact categories in Table 5.1, even if they are not explicitly focused on gender, such as ensuring equal access to education, skills development, jobs, new business opportunities and equality of wages. Therefore, it is important to consider a wide range of potentially relevant and significant impact categories that may be interconnected when choosing which

impact categories to assess. For further information on linkages between impact categories, see Box 5.2.

As users proceed through subsequent chapters in this methodology, the decision about which impact categories are relevant and significant, and should be included in the assessment is likely to become clearer. For this reason, users should develop an initial list of impact categories to assess in this chapter, and then revisit the list after completing the steps in Chapters 6 and 7. Box 5.3 provides more information on this iterative process.

Identifying significant impact categories
The most objective criterion for the selection of impact categories is significance, which involves determining which impact categories are expected to be significantly affected by the policy, either positively or negatively. Users should review the list of impact categories in Table 5.1 and consider which may be significantly affected by the policy. For example, a solar PV incentive policy may be reasonably expected to have significant impacts on air quality and energy independence, and insignificant impacts on tourism and waste generation. Table 5.2 provides a template, with an example, that can be used to assess each impact category.

To ensure a complete assessment, users should consider a wide range of potential impacts, including positive and negative, intended and unintended, short-term and long-term, and in-jurisdiction and out-of-jurisdiction impacts. These types of impacts are detailed further in Chapter 6 (in Table 6.1).

BOX **5.2**

Interlinkages between sustainable development impact categories

When selecting which impact categories to assess, users should consider impact categories that are likely to be interrelated. Examples of interrelated impact categories, often called "nexuses", are:

· health, poverty, gender and education
· water, soil and waste
· education, health, food and water
· water, energy, food, land and climate
· infrastructure, inequality and resilience.

More information on interactions between impact categories and SDGs can be found in a number of resources.[15]

16 Jungcurt (2016); Melamed, Schmale and von Schneidemesser (2016); Nilsson, Griggs and Visbeck (2016); ISC (2017); Nerini et al. (2017)

BOX **5.3**

Iterative process to identify relevant and significant impact categories in Chapters 5, 6 and 7

Chapters 5, 6 and 7 present a stepwise prioritization process for identifying impact categories and specific impacts of a policy. In Chapter 5, users consider a broad array of possible *impact categories* (e.g. jobs) across the environmental, social and economic dimensions, and identify which are relevant and significant to the policy being assessed. Next, in Chapter 6, users identify specific impacts within the chosen impact categories (e.g. an increase in jobs from solar PV installation due to the policy). In Chapter 7, users qualitatively assess these specific impacts and determine which should be quantified (in Chapters 8–11), based on the criteria of significance and feasibility (e.g. the increase in jobs from solar PV installation is significant and feasible to quantify).

In this process, users begin Chapter 5 by considering a long list of impact categories and end Chapter 7 with a short list of specific impacts to be quantified. These steps are illustrated through the example of a solar PV incentive policy in Tables 5.2, 6.3 and 7.5.

The steps are iterative. For example, users may find in Chapter 6 or 7 that certain impact categories not deemed significant in Chapter 5 are in fact significant and should be included in the assessment. Users should revisit Chapter 5 after going through the steps in Chapters 6 and 7 to make sure that all potentially significant and relevant impact categories are included in the assessment, as illustrated in Figure 5.3.

FIGURE **5.3**

Iterative process to identify relevant and significant impact categories and specific impacts
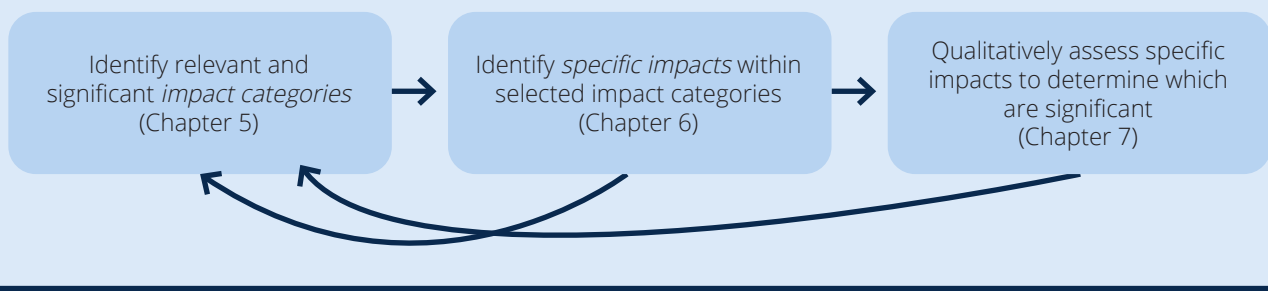
Users should rely on evidence when determining which impact categories may be significantly affected by the policy, to ensure that potentially significant impact categories are considered, even if they are not immediately obvious. For example, a solar PV incentive policy could increase waste generation significantly if PV panels or batteries need to be replaced frequently, depending on whether these can be recycled.

Evidence for determining the significance of impact categories may include published studies on similar policies and impact categories in the same or other jurisdictions, regulations, development plans, regulatory impact analyses, environmental impact assessments, risk assessments, economic studies, relevant media reports, consultation with experts and stakeholders, prior experience, or other methods. If evidence does not exist, expert judgment should be used.

If it is not clear whether the policy is expected to significantly affect a given impact category, or if the assessment objectives or other factors suggest that an impact category should be included even if it may not be significant, the most robust approach is to include it in the assessment for further analysis in later chapters. Chapters 6 and 7 provide detailed guidance on identifying and assessing the significance of specific impacts.

Identifying relevant impact categories
Another criterion for the selection of impact categories is their relevance, from the perspective of users, decision makers and stakeholders. Relevance is a more subjective criterion than significance. It may be determined based on the objectives of the assessment, national or local policy objectives, sustainable development goals and priorities, local circumstances, and stakeholder priorities, as voiced during stakeholder consultation processes.

Applying the criterion of relevance involves a policy decision by the user regarding which impact categories are priorities. For example, a solar PV incentive policy may be explicitly designed to reduce GHG emissions and reduce negative health impacts caused by air pollutants, so both of these impact categories are relevant to the policy objectives. Stakeholders such as workers in the energy sector may also be interested in how the policy will affect employment in affected regions, so the impact category of jobs is also relevant. Users should include as many relevant impact categories as possible, so that the assessment properly addresses the policy's objectives, and stakeholders' priorities and concerns. Users should also consider certain impact categories (e.g. poverty and gender equality) even if the policy is not explicitly designed to address them and the impacts may not at first seem significant – for example, to develop safeguards against the policy leading to negative or unintended impacts.

Ensuring comprehensiveness
Policies may have both positive and negative impacts on sustainable development. Identifying possible adverse impacts is important to make any necessary adjustments to the policy and to assist those who may be negatively affected. The list of impact categories to assess should therefore be comprehensive, including both positive and negative impacts. Including possible adverse impacts in the list and later finding that such impacts have not manifested or are insignificant is a useful way of demonstrating that the policy is appropriate. In the case of a solar PV incentive policy, for example, it may be relevant to include "electricity prices" and "access to clean, reliable and affordable energy" as impact categories, to monitor any possible adverse impact of the policy on electricity prices and energy access.

A comprehensive list should include impact categories from each of the three dimensions of sustainable development (economic, social and environmental). The goal of sustainable development calls for striking a balance between each of its three dimensions. A policy with highly positive environmental and economic impacts but highly negative social consequences would not be regarded as truly sustainable.

Consulting stakeholders
Users should consult stakeholders to identify which impact categories are priorities for different stakeholder groups, and which meet the criteria of significance, relevance and comprehensiveness. Different groups of stakeholders approach a policy from different perspectives. By conducting stakeholder consultations to identify impacts, users

can enhance the completeness of the assessment, identify and address possible unintended or negative impacts early on, and increase acceptance of the final assessment results.

Users should identify the range of stakeholder groups that may be affected by, or may influence, the implementation of a policy and should ensure that legitimate representatives of these stakeholder groups are included in the consultations. Users should recognize that stakeholder groups are not homogeneous, and that age, ethnicity and gender may shape the perceptions and impacts that policies will have on different individuals. Therefore, efforts should be made to ensure that stakeholder engagement is as representative and inclusive as possible. The ICAT *Stakeholder Participation Guide* provides more information on how to identify stakeholders (Chapter 5), provide information to them (Chapter 7), and conduct consultations (Chapter 8) to identify all significant and relevant impact categories. Box 5.4 provides an example of identifying stakeholders for an assessment in Mexico.

Public participation is a means of ensuring good governance, transparency, accountability and integrity of the sustainable development assessment. Adequate access to information and opportunities to provide input, including through effective consultations, will allow stakeholders to contribute their knowledge and experience to the evaluation of the sustainable development impacts of policies. Local communities, indigenous peoples, industry representatives, trade unions, civil society organizations (including women's and youth organizations) and researchers may have very valuable input to offer as to what impact categories are significant and relevant, so that users can achieve a comprehensive and balanced assessment of sustainable development impacts. In most countries, laws require access to information and public participation in assessment of social and environmental impacts of proposed interventions. In the case of a solar PV incentive policy, public consultations that are open to citizens at large, municipal governments, professional associations from the energy sector and public health researchers may bring impact categories to the attention of the user that would otherwise have been left out.

Reporting
Reporting which impact categories are included and excluded is important to ensure that the sustainable development impact assessment is conducted in a transparent way, which will increase its legitimacy, usefulness and replicability. Users should report

which impact categories are included and excluded from the assessment boundary, and justify any exclusions of impact categories that may be relevant or significant, or identified by stakeholders.

Table 5.2 provides an example of reporting which impact categories are included and excluded for the example of the solar PV incentive policy. The table can be used as a template to help decide which impact categories to assess and to report which impact categories are included in the assessment boundary. It contains several of the

impact categories in Table 5.1, as well as columns for users to indicate (1) whether each impact category is relevant (from the perspective of the user, decision makers or stakeholders), (2) whether the policy is significant (i.e. expected to significantly affect each impact category) and (3) whether each impact category is included in the assessment boundary. Users should provide a brief rationale for the decision to include or exclude a given impact category and to explain the expected impacts of the policy on the impact category.

BOX **5.4**

Identifying and mapping stakeholders of a sustainable development assessment in Mexico

A researcher at Aalto University assessed the sustainable development impacts of two climate actions in public buildings in Mexico: installing PV panels and changing fluorescent lamps to LED lamps. Both actions are part of the Carbon Management Plan of the Mexican state of Jalisco, which was developed by the Ministry of Environment and Territorial Development, in cooperation with Carbon Trust. The office buildings of the Sub-Administration of the Ministry of Planning, Administration, and Finance were the first to undergo the retrofit.

As part of the assessment, it was important to identify a balanced group of stakeholders to provide a comprehensive and robust range of information and insights. To identify stakeholders to engage, the study used a rainbow diagram (Figure 5.4) from the ICAT *Stakeholder Participation Guide*. The diagram helped identify and classify specific people or groups of people that are both affected by the policy and have influence over the policy to varying levels. This helped identify key impact categories for the assessment.

FIGURE **5.4**

Rainbow diagram to identify relevant stakeholders for the assessment
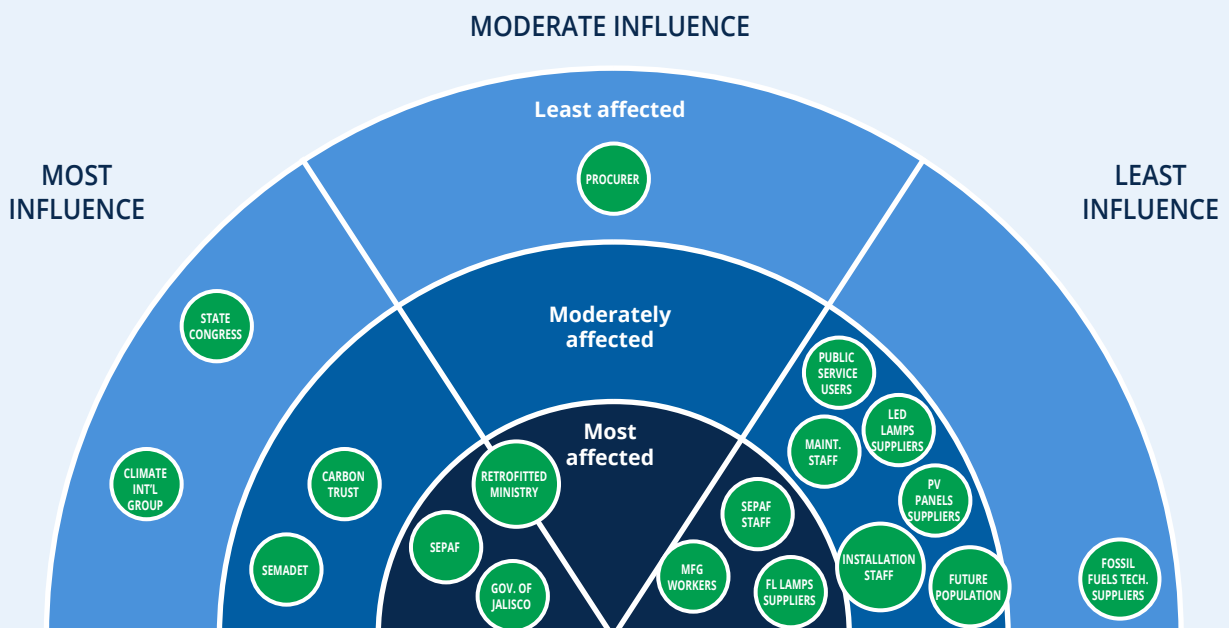
TABLE **5.2**

**Example of reporting which impact categories are included in the assessment
for a solar PV incentive policy (hypothetical example only)**

Dimension	Impact category	Relevant?	Significant?	Included in the assessment boundary?	Brief description (rationale for determination of relevance and significance)
Environmental	Climate change mitigation	Yes	Yes	Yes	The policy is expected to significantly reduce GHG emissions by replacing fossil fuel energy with solar energy.
	Air quality, health impacts of air pollution	Yes	Yes	Yes	The policy is expected to significantly reduce air pollution by replacing fossil fuel energy with solar energy.
	Waste generation and disposal	Yes	Yes	Yes	The policy is expected to have both positive and negative impacts on waste by reducing fossil fuel energy waste and increasing solar energy waste (e.g. PV panels or batteries).
	Energy	Yes	Yes	Yes	The policy is expected to significantly increase renewable energy generation by replacing fossil fuel energy with solar energy.
	Availability of fresh water	No	Yes	No	The policy is expected to increase the availability of fresh water by reducing water used by coal power plants, but assessing availability of fresh water is not relevant to the assessment objectives and was not expressed as a priority of stakeholders.
	Land-use change	Yes	No	No	The policy is not expected to significantly affect these impact categories in the local context.
	Biodiversity of terrestrial ecosystems	Yes	Yes	Yes	
	Soil quality	Yes	No	No	
	Nuclear radiation	Yes	No	No	

TABLE 5.2, continued

Example of reporting which impact categories are included in the assessment for a solar PV incentive policy (hypothetical example only)

Dimension	Impact category	Relevant?	Significant?	Included in the assessment boundary?	Brief description (rationale for determination of relevance and significance)
Social	Access to clean, affordable and reliable energy	Yes	Yes	Yes	The policy is not expected to increase access to energy, since all eligible households and buildings are already connected to the electricity grid, but is expected to significantly improve access to clean, affordable and reliable energy.
	Capacity, skills and knowledge development	Yes	Yes	Yes	The policy is expected to significantly improve training for skilled workers in the solar manufacturing, installation and maintenance sectors.
	Quality and safety of working conditions	Yes	Yes	Yes	The policy is expected to improve working conditions by increasing the number of workers in the solar sector and reducing the number in the fossil fuel sector.
	Diseases	Yes	No	No	The policy is not expected to significantly affect these impact categories, although reduced energy costs may reduce poverty.
	Freedom of expression	Yes	No	No	
	Access to safe drinking water	Yes	No	No	
	Poverty	Yes	No	No	
	Gender equality	Yes	No	No	The policy is not expected to significantly affect these impact categories, although gender equality is a high policy priority, and some solar energy policies will increase women's participation in the labour force through new jobs, and women's entrepreneurship through new business opportunities.
	Mobility	No	No	No	This impact category is not relevant to the assessment or policy objectives and was not expressed as a priority of stakeholders.

TABLE 5.2, continued

Example of reporting which impact categories are included in the assessment for a solar PV incentive policy (hypothetical example only)

Dimension	Impact category	Relevant?	Significant?	Included in the assessment boundary?	Brief description (rationale for determination of relevance and significance)
Economic	Jobs	Yes	Yes	Yes	The policy is expected to create a significant number of new jobs in the solar manufacturing, installation and maintenance sectors.
	Income	Yes	Yes	Yes	The policy is expected to lead to significant financial savings for households, institutions and other organizations through reduced energy costs.
	Wages	No	Yes	No	The policy is expected to increase wages for workers in the solar sector, but assessing wages is not relevant to the objectives and was not expressed as a priority of stakeholders.
	New business opportunities	Yes	Yes	Yes	The policy is expected to create a significant number of new business opportunities in the solar manufacturing, installation and maintenance sectors.
	Energy independence	Yes	Yes	Yes	The policy is expected to lead to significant improvement in energy independence by reducing energy imports.
	Economic activity	No	No	No	The policy may affect these impact categories, but the impact is not expected to be significant. They are also not relevant to the assessment or policy objectives and were not expressed as a priority of stakeholders.
	Economic productivity	No	No	No	
	Prices of goods and services	No	No	No	
	Balance of payments	No	No	No	

Note: This example is illustrative only. The impact categories that are relevant or significant for a solar PV incentive policy will depend on the local context.

5.2 Identify indicators for each included impact category

An indicator is a metric that can be estimated to indicate the impact of a policy on a given impact category, or can be monitored over time to enable tracking of changes towards targeted outcomes. To assess impacts in later chapters, appropriate indicators need to be identified for each impact category that can be used to assess the impacts of the policy. One or more indicators may be relevant for each impact category. For example, if one of the impact categories included in the assessment is "gender equality and empowerment of women", a user may select the indicators "average income of women", "number of women in the labour force" and "proportion of women in senior management positions" to assess the impact of the policy.

It can be useful to identify indicators for qualitative assessments (Chapters 6 and 7). Indicators for a qualitative assessment may be qualitative or quantitative. Indicators must be defined for quantitative assessments, because specific indicators are estimated in the baseline and policy scenarios (Chapters 8–10), and monitored over time (Chapter 12).

For quantitative assessments, users should identify possible indicators at this stage to inform the qualitative assessment in Chapters 6 and 7. These should be revisited after users have identified the specific impacts of the policy in Chapter 6 and determined which are significant in Chapter 7. The decision about which indicators to quantify is described in Section 8.1.

5.2.1 Selecting indicators

Indicators should enable users to adequately assess whether a policy affects a given impact category, and how. For guidance and examples of indicators that can be used, see:

- United Nations SDG website[17]

- United Nations SDG indicators website,[18] including the global SDG indicators database[19] and list of indicators[20]

- United Nations *Indicators of Sustainable Development: Guidelines and Methodologies*.[21]

Indicators can be defined in a variety of ways for a given impact category. For example, to measure a policy's impact on the number of jobs, indicators could include the number of people employed, the number of people unemployed, the employment rate, the unemployment rate, the number of women and men employed, the number of short-term and long-term jobs, the number of full-time-equivalent jobs, the number of jobs in various economic sectors, and the number of new jobs created. Additional indicators are needed to measure a policy's impact on the quality of jobs, such as indicators related to wages, benefits, job security and worker safety. Users can also decide whether to estimate the number of direct jobs (e.g. the number of people installing solar PV panels), indirect jobs (e.g. jobs involved in solar panel manufacturing, distribution and marketing) and/or induced jobs (e.g. jobs in other sectors, such as food services supported by increased wages from new solar PV installation jobs). As a conservative and simplifying assumption, users may decide to only assess direct jobs.

The choice of specific indicators, representing the specific aspects of each impact category to be measured, should be based on the objectives of the assessment, in the context of what types of data are available. When selecting appropriate indicators, users should consider the criteria outlined in Table 5.3.

Users should consider defining indicators separately for various groups in society in addition to aggregated statistics. For example, for the impact category of jobs, users should consider defining indicators for the number of men and women employed, in addition to the total number of people employed, to show the impacts of a policy by gender. As another example, since water scarcity and air quality have locally specific impacts, users should consider defining indicators for different regions within a country to assess the local impacts of a policy on water scarcity or air quality. Indicators may be disaggregated by gender, income groups, racial or ethnic groups, education levels, geographic regions, urban versus rural, among others.

Table 5.4 provides examples of indicators that can be disaggregated by gender.

TABLE **5.3**

Criteria for selecting indicators

Criteria	Description
Relevance	Does the indicator measure what really matters, as opposed to what is easiest to measure? Users should avoid measuring what is easy to measure instead of what is needed to meet the assessment objectives.
Credibility	How trustworthy or believable are the data to the intended audiences of the evaluation report? Stakeholders and experts consulted may help identify credible sources of information. Technical review of data can help improve credibility.
Validity	Will the indicator reflect what the evaluator set out to measure? Validity refers to whether a measurement actually measures what it is supposed to measure.
Reliability	If data on the indicator are collected in the same way from the same source using the same decision rules every time, will the same results be obtained? One way of improving reliability is ensuring that monitoring occurs regularly.
Feasibility	Users should avoid trying to measure too much. To limit the costs of data collection, users should consider what indicators are already being monitored. Users should also consider whether the indicator can be measured directly or whether (and how many) parameters are needed to calculate the value of the indicator.

TABLE **5.4**

Examples of indicators that can be disaggregated by gender

Impact category	Indicators
Access to health-care services	• Proportion of women/men, girls/boys with health insurance or access to public health system
Hunger, nutrition and food security	• Prevalence rate of undernourished girls/boys, women/men
Illness and death	• Life expectancy for women/men (years)
Access to safe drinking water	• Percentage of population (women/men) with access to safe drinking water
Access to adequate sanitation	• Percentage of population (women/men) with access to sanitation facilities
Access to clean, reliable and affordable energy	• Percentage of population (women/men) with access to clean, reliable and affordable energy
Access to land	• Percentage of population (women/men) with access to land
Accessibility and quality of education	• Proportion of girls/boys getting secondary school education • Average years of schooling for girls/boys
Capacity, skills and knowledge development	• Number of women/men, girls/boys who have received training

TABLE 5.4, continued

Examples of indicators that can be disaggregated by gender

Impact category	Indicators
Climate change education, public awareness, capacity-building and research	• Number of women/men, girls/boys who have received training
Economic inequality	• Average income for women/men • Average wealth for women/men; difference in wealth between women and men • Average wages for women/men; gender wage gap
Gender equality and empowerment of women	• Average income for women/men • Gender wage gap • Proportion of girls and women in schools • Proportion of women in tertiary education • Proportion of women in the labour force • Proportion of women in senior management positions • Proportion of women in senior government positions
Jobs	• Number of women/men employed • Number of women/men unemployed • Employment rate for women/men • Unemployment rate for women/men • Number of jobs, including short-term jobs and long-term jobs, in different sectors for women/men • Number of new jobs created in different sectors for women/men
New business opportunities	• Number of new companies headed by women/men

5.2.2 Examples of indicators

Table 5.5 provides examples of indicators for selected impact categories in Table 5.1.

TABLE **5.5**

Examples of indicators for selected impact categories

Impact category	Indicators
Environmental impacts	
Climate change mitigation (SDG 13)	• Net emissions of greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3, and, if relevant, other gases identified by the IPCC) (t/year) and in carbon dioxide equivalent (CO_2e) using global warming potential • Net emissions of short-lived climate pollutants (SLCPs): black carbon, organic carbon, CO, NMVOCs, sulfates
Ozone depletion	• Net emissions of ozone-depleting substances (such as CFC-11, CFC-113, halon 1211, methyl chloroform) (t/year) • Stratospheric ozone concentration (t/m^3)
Air quality and health impacts of air pollution (SDGs 3, 11, 12)	• Emissions of air pollutants such as particulate matter ($PM_{2.5}$, PM_{10}), ammonia, ground-level ozone (resulting from VOCs and NO_x), CO, SO_2, NO_2, fly ash, dust, lead, mercury and other toxic pollutants (t/year) • Concentration of air pollutants (mg/m^3) • Indoor and outdoor air quality (air quality index) • Morbidity (DALYs, QALYs and ADALYs) • Mortality (avoided premature deaths per year)
Visibility	• Visual range (in units of distance) • Deciview (dv)
Availability of fresh water (SDG 6)	• Water consumption (m^3) or total amount of water removed from freshwater sources for human use • Proportion of total water resources used (water scarcity) • Water-use efficiency or intensity • Stress-weighted water footprint (litres)
Water quality (SDGs 6, 14)	• Net emissions of SO_2, NO_x, phosphorus, nitrogen, toxic pollutants (t/year) • Acidity (pH) • Accumulated exceedance • Eutrophication from nutrient pollution (such as phosphorus and nitrogen compounds) • Toxicity from emissions of toxic chemicals (e.g. metals, PAH)
Biodiversity of freshwater and coastal ecosystems (SDGs 6, 14)	• Proportion of marine area protected • Proportion of fish stocks within safe biological limits • Percentage of fish tonnage landed with maximum sustainable yield • Damage on ecosystem (potential affected fraction of species) • Marine trophic index • Extinction rate • Biodiversity intactness index

TABLE 5.5, continued

Examples of indicators for selected impact categories

Impact category	Indicators
Environmental impacts, continued	
Biodiversity of terrestrial ecosystems (SDG 15)	• Species diversity (number of species or species richness) • Change in threat status of species (abundance of selected key species, invasive alien species or endangered species) • Proportion of terrestrial area protected • Damage to ecosystem (potential affected fraction of species) • Extinction rate • Biodiversity intactness index • Quality of ecosystem services
Land-use change, including deforestation, forest degradation and desertification (SDG 15)	• Annual change in degraded or desertified arable land (% or hectares) • Area of forested land as a percentage of original or potential forest cover • Proportion of land area covered by forests • Area of forest under sustainable forest management • Arable and permanent cropland area • Area under organic farming
Soil quality (SDG 2)	• Net emissions of SO_2, NH_3 and NO_x (t/year) • Soil organic matter • Acidity (pH) • Extent of soil erosion
Waste generation and disposal (SDG 12)	• Solid waste generated (t/year) • Wastewater generated • Recycling rate (percentage of waste recycled) • Proportion of materials reused • Proportion of waste composted
Treatment of solid waste and wastewater (SDG 6)	• Proportion of solid waste and wastewater safely treated
Energy (SDG 7)	• Energy consumption • Energy efficiency • Energy generated by source • Renewable energy generation • Renewable energy share of total final energy consumption • Primary energy intensity of the economy (e.g. tonnes of oil equivalent/GDP)
Depletion of non-renewable resources (SDG 12)	• Consumption of mineral resources • Consumption of fossil fuels • Scarcity of resources
Toxic chemicals released to air, water and soil	• Emissions (t/year)
Genetic diversity and fair use of genetic resources (SDGs 2, 15)	• Genetic diversity of seeds, plants and animals

TABLE 5.5, continued

Examples of indicators for selected impact categories

Impact category	Indicators
Environmental impacts, continued	
Nuclear radiation	• Human exposure efficiency relative to uranium-235 • Morbidity (DALYs)
Noise pollution	• Noise level (decibels)
Social impacts	
Accessibility and quality of health care (SDG 3)	• Proportion of people with health insurance or access to public health system
Hunger, nutrition and food security (SDG 2)	• Prevalence rate of undernourished people • Average share of food expenditures in total household expenditures • Per capita total amount of net calories available in a given country • Level of nutrition or malnutrition • Agricultural crop diversity
Illness and death (SDG 3)	• Life expectancy (years) • Avoided premature deaths per year • Morbidity (DALYs, QALYs and ADALYs) • Maternal mortality • Infant mortality • Prevalence of diseases • Proportion of population with diagnosed diseases or hospitalized from specific diseases • Illnesses from hazardous chemicals, air pollution, water pollution and soil pollution • Prevalence or reduction in respiratory illnesses • Bioaccumulation of POPs and heavy metals
Access to safe drinking water (SDG 6)	• Percentage of population with access to safe drinking water
Access to adequate sanitation (SDG 6)	• Percentage of population with access to sanitation facilities
Access to clean, reliable and affordable energy (SDG 7)	• Percentage of population with access to clean, reliable and affordable energy • Price of energy • Emissions per unit of energy • Number and length of service interruptions
Access to land (SDG 2)	• Percentage of population with access to land
Standard of living	• Gross national income per capita (adjusted according to PPP$)
Quality of life and well-being (SDG 3)	• OECD Better Life Index • Human Development Index • Gross national happiness
Accessibility and quality of education (SDG 4)	• Proportion of children getting primary and secondary school education • Average years of schooling

TABLE 5.5, continued

Examples of indicators for selected impact categories

Impact category	Indicators
Social impacts, continued	
Capacity, skills and knowledge development (SDGs 4, 12)	• Proportion of youth and adults with scientific, technological or other skills, by type of skill • Number of people who have received training
Climate change education, public awareness, capacity-building and research	• Extent to which climate change education is mainstreamed in national education policies, curricula, teacher education and student assessment • Proportion of population aware of climate change • Number of people who have received training
Quality of institutions (SDG 10)	• Effectiveness of institutions • Credibility of institutions • Accountability of institutions • Legitimacy of institutions
Poverty (SDG 1)	• Poverty rate (proportion of population living below national poverty line) • Proportion of people living on less than $1.25 (SDGs), $1.90 (World Bank) or other amount per day • Number of people living in poverty • Multidimensional poverty index (see http://hdr.undp.org/sites/default/files/hdr2015_technical_notes.pdf)
Economic inequality (SDGs 8, 10)	• Income equality/inequality, average income for different groups, share of national income by income quintile • Wealth equality/inequality, average wealth for different groups, share of national wealth by wealth quintile • Wage equality/inequality, average wages for different groups
Gender equality and empowerment of women (SDG 5)	• Average income for women and men • Gender wage gap • Proportion or number of girls and women in schools • Proportion or number of women in tertiary education • Proportion or number of women in the labour force • Proportion or number of women in senior management positions • Proportion or number of women in senior government positions • Women's decision-making power within family/community • Women's ability to spend income earned
Racial equality	• Average income by racial/ethnic group • Proportion of people in schools by racial/ethnic group • Proportion of people in the labour force by racial/ethnic group • Proportion of people in senior management positions by racial/ethnic group
Indigenous rights	• Extent of recognition of ancestral land titles • Extent of free, prior and informed consent • Extent of protection of indigenous traditional knowledge • Extent of empowerment of indigenous communities

TABLE 5.5, continued

Examples of indicators for selected impact categories

Impact category	Indicators
Social impacts, continued	
Mobility (SDG 11)	• Number of people or proportion of population with convenient access to employment, schools, health care or recreation, by gender, age and persons with disabilities
Traffic congestion (SDG 11)	• Time lost during transportation • Economic cost of time lost
Road safety (SDGs 3, 11)	• Number of deaths and injuries from road traffic accidents per year
Resilience to dangerous climate change and extreme weather events (SDG 13)	• Creation and maintenance of climate-resilient infrastructure • Reduction of natural disaster risks
Economic impacts	
Economic activity (SDG 8)	• GDP • Gross national income • Local or state/provincial GDP • Annual growth rate of real GDP per capita
Economic productivity (SDGs 2, 8)	• Agricultural productivity (harvested crop yields per hectare)
Jobs (SDG 8)	• Number of people employed • Number of people unemployed • Employment rate • Unemployment rate • Number of jobs, including short-term jobs and long-term jobs, in different sectors • Number of new jobs created in different sectors
Wages (SDG 8)	• Average hourly wage (nationally or in different economic sectors) • Average hourly wage for different groups (by gender, income, etc.)
Worker productivity	• Labour productivity per hour or per unit of labour • Total employment or number of hours worked per GDP
New business opportunities (SDG 8)	• Number of new companies • Revenue and profit • Amount of new investment • Number of active long-term partnerships
Growth of new sustainable industries (SDGs 7, 17)	• Amount of investment in clean technology sector • Revenue and profit from clean technology sector • Number of projects
Competitiveness of domestic industry in global markets	• Market share • Quantity/value of exports • Balance of trade

TABLE 5.5, continued

Examples of indicators for selected impact categories

Impact category	Indicators
Economic impacts, continued	
Economic development from tourism and ecotourism (SDG 8)	• Revenue from tourism • Tourism GDP as a proportion of total GDP • Number of jobs in tourism industries as a proportion of total jobs, and growth rate of jobs (by women/men)
Income (SDG 10)	• Income per capita • Median household income • Annual growth in household income
Prices of goods and services	• Energy prices
Costs and cost savings	• Fuel costs or cost savings • Health-care costs or cost savings • Economic costs of human health losses from air pollution based on social welfare indicator (ADALYs monetized in terms of social welfare valuation based on willingness to pay VSL estimates) or national accounts indicator (ADALYs monetized based on foregone output estimates based on productivity/wage approaches)
Inflation	• Inflation rate
Balance of trade	• Total imports • Total exports • Net imports
Government budget surplus/deficit	• Annual revenue • Annual expenditures • Annual surplus or deficit
Energy independence	• Net imports of fossil fuels (coal, oil, natural gas)

Abbreviations: ADALY, averted disability-adjusted life year; CFC, chlorofluorocarbon; CH_4, methane; CO, carbon monoxide; CO_2, carbon dioxide; DALY, disability-adjusted life year; GDP, gross domestic product; HFC, hydrofluorocarbon; NF_3, nitrogen trifluoride; NH_3, ammonia; NMVOC, non-methane volatile organic compound; N_2O, nitrous oxide; NO_2, nitrogen dioxide; NO_x, nitrogen oxides; OECD, Organisation for Economic Co-operation and Development; PAH, polycyclic aromatic hydrocarbon; PFC, perfluorocarbon; POP, persistent organic pollutant; PPP, purchasing power parity; QALY, quality-adjusted life year; SF_6, sulfur hexafluoride; SO_2, sulfur dioxide; VOC, volatile organic compound; VSL, value of statistical life