5 Identifying and understanding stakeholders

Effective stakeholder participation involves identifying all types of stakeholders and understanding their differences across many dimensions, with special attention to those who may be marginalized. Stakeholder mapping helps users to understand the relative influence, impact or other characteristics of different stakeholder groups, and to prioritize stakeholders with respect to objectives and strategies for stakeholder participation.

Checklist of key recommendations

- Establish criteria for identifying stakeholders
- Establish a participatory process for identifying stakeholders
- Follow a transparent and participatory process for understanding the interests, power and influence of different stakeholder groups; their stake in the policy; the way and extent to which they may be affected; and their expectations of the participation process
- Establish a participatory process for identifying legitimate representatives of stakeholder groups
- Identify the opportunities and barriers affecting the participation of different stakeholders, particularly for women, indigenous peoples, youth and other groups that may be marginalized, and involve these stakeholders in identifying appropriate methods and approaches to enable their effective participation

5.1 Importance of identifying and understanding stakeholders

Identifying and understanding the full range of stakeholders relevant to the design, implementation and assessment of policies is important to:

- identify all parties with an interest or stake in the policy who will be interested or have a right to participate
- build an understanding of the power and influence of stakeholders, and how they can influence the policy, to help harness their support and avoid risks caused by lack of stakeholder support
- promote inclusiveness and raise awareness among stakeholders about other stakeholders, and, in the case of divergent interests, the potential need to collaborate and compromise to find a solution that is fair to all parties
- increase understanding of the extent to which stakeholders may be impacted positively or negatively by the policy, as a basis for revising the policy to reduce negative impacts and enhance positive impacts
- understand the capacity of individuals and groups participating, and the incentives and obstacles to their participation so that appropriate methods to facilitate participation can be adopted.

5.2 Criteria for stakeholder identification

It is a *key recommendation* to establish criteria for identifying stakeholders. The criteria should identify all individuals or groups who may:

- be affected, either positively or negatively, and directly or indirectly, by the implementation and associated impacts of the policy, including those who are potential actors in the design or implementation of the policy and those who are actors in the issues that the policy aims to address
- directly affect the design, implementation or assessment of the policy, either positively or negatively
- have an interest in the policy, including those who bring expert knowledge to the process.[21]

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21   Adapted from World Bank (2016).

Some stakeholders may be identified or may be marginalized through a country's policies, laws and regulations, which should be taken into consideration in developing criteria for inclusion of stakeholders.

5.3 Methods for stakeholder identification

It is a *key recommendation* to establish a participatory process for identifying stakeholders. Stakeholders who are identified early in the process can help to identify further stakeholders and appropriate methods for their participation. It may be necessary to revisit stakeholder identification throughout the process if new information becomes available when the context for, or the details of, the policy change. All stakeholders who want to participate should be provided with equal opportunities throughout the process to participate and contribute to outcomes.[22]

Stakeholders can be identified, considered and selected using a combination of approaches, including:

- **Experts.** Ask staff, government agencies, NGOs, local people, interested groups or academics who have knowledge about the policy context.

- **Self-selection.** Make announcements at meetings, in newspapers, on local radio or through other media to invite stakeholders to come forward. This will attract those who believe they will gain from communicating their views.

- **Other stakeholders.** Ask stakeholders to suggest other stakeholders who share their views and interests, as well as those who may have a different way of looking at the issues relevant to the policy.

- **Written records and population data.** Use census and population data, which can provide useful information about numbers of people by age, gender, religion and residence, among other characteristics. Sources of data include directories, organizational charts, surveys, reports or written records issued by local authorities, donor agencies, government

bodies, experts, academics, NGOs, business and industry.

- **Oral or written accounts of major events.** Ask stakeholders to describe major events that are relevant to the policy context and the people who were involved in these events.

- **Checklists.** Use or modify the checklists provided in Boxes 5.1 and 5.2.[23]

5.4 Understanding stakeholder profiles and characteristics

It is a *key recommendation* to follow a transparent and participatory process for understanding the interests, power and influence of different stakeholder groups; their stake in the policy; the way and extent to which they may be affected; and their expectations of the participation process. An understanding of the different profiles and characteristics of stakeholder groups and individuals can be developed by systematically seeking to understand their relationship to the policy in terms of:

- their knowledge of the issues relating to the policy

- their existing relationship with the design, implementation and assessment of the policy (e.g. close or distant, formal or informal, level of support or opposition)

- how the policy affects them (e.g. positive or negative, direct or indirect)

- their perceived power and ability to advance or hinder the design, implementation or assessment of the policy, or the participation processes

- their relationships with other stakeholders and interests

- their expectations of stakeholder participation

- their willingness to participate

- their type of organization (e.g. civil society, government, consumer, producer, trader)

BOX **5.1**

Illustrative checklist for stakeholder identification[20]

1.   Individuals (e.g. company owners)
2.   Families and households (e.g. long-term local residents)
3.   Traditional groups (e.g. clans)
4.   Community-based groups (e.g. self-interest organizations, neighbourhood associations, gender or age-based associations)
5.   Local traditional authorities (e.g. village council of elders, traditional chief)
6.   Political authorities recognized by national laws (e.g. elected representatives at the village, local or district levels)
7.   NGOs that link different communities (e.g. council of village representatives, district or local-level association of fishermen, natural resource management groups)
8.   Local governance structures (administration, police, the judicial system)
9.   Agencies with legal jurisdiction over natural resources, land and water
10.   Local governmental services in areas such as education, health, environment, agriculture and forestry
11.   Relevant NGOs at the local, national or international levels
12.   Political party structures (at various levels)
13.   Religious bodies (at various levels)
14.   National interest organizations (e.g. workers' unions or people's associations, women's groups)
15.   National service organizations (non-governmental voluntary service clubs)
16.   Voluntary cultural associations
17.   Businesses and commercial enterprises (from local cooperatives to international corporations), and business associations
18.   Universities and research organizations, and technical or professional organizations or agencies
19.   Local banks and credit institutions, and national banks
20.   Government authorities at the district and regional levels
21.   National governments, including ministries and agencies responsible for relevant sectors
22.   Foreign aid or development cooperation agencies (government and non-government)
23.   Staff and consultants of relevant projects and programmes
24.   International multilateral agencies (such as United Nations Children's Fund – UNICEF, Food and Agriculture Organization of the United Nations, United Nations Environment Programme – UNEP, UNDP)
25.   Other international organizations (such as International Union for Conservation of Nature, World Wildlife Fund)

- their sociocultural context

- their relationship to the geographical scale of the policy

- their capacity to participate (e.g. language barriers, information technology literacy, disability)

- their legitimacy, and role in governance and representation mechanisms.[25]

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25 Adapted from AccountAbility (2015).

BOX **5.2**

Checklist of questions to deepen stakeholder identification

1. Are there specific communities, groups or individuals who may be affected by the policy or impact assessment? For example, are there indigenous communities or nomads, or traditional resource users with customary rights in the national context? Are there recent arrivals? Non-residents? Absentee landlords? Are there local communities or non-profit organizations concerned with the issues?

2. Are there business people or industries (across a wide range of sectors) that might be negatively affected by the policy, impact assessment and other decisions? Who, including businesses, has invested in the economic activities that will be affected?

3. Are there research, development, conservation, mitigation or adaptation projects and programmes to be considered? Are there employees (national and international) who will be affected by the policy? Who among these people are active in, or affected by, the policy?

4. Who are the main traditional authorities in the jurisdiction who can speak about the implications of the policy – and about what is at stake? What are the respected institutions that people rely on?

5. Who has access to, and/or uses, the land, forest, air, water or other resources that are likely to be affected?

6. Which communities, groups and individuals are most dependent on, or have a stake in, the policy or impact assessment processes? Is this related to livelihood or economic activity?

7. Who is responsible for claims, including customary rights and legal jurisdiction, in the territory or area to be affected? Are communities with historical or other types of acquired rights involved?

8. Which government agencies are officially responsible for the policy?

9. Are there national or international bodies involved because of specific laws or treaty obligations?

10. Which communities, groups or individuals are most knowledgeable about, and capable of dealing with, the issue and the policy? So far, who has direct experience in managing the issue and policy, or facilitating their participation in managing them?

11. How does use of the resources change depending on the season, the geography and the interests of the users? Are there seasonal migration patterns? Are there major events or trends (e.g. development projects, land reforms, migration, disaster, natural increase or decrease in the population) affecting local communities and other interested parties?

12. Are there co-management projects around that people are familiar with? If so, to what extent are they succeeding? Who are their main partners? What experiences do people have with co-managing GHG mitigation initiatives or sustainable development initiatives?

13. Who are the legitimate representatives of these stakeholder groups?

## 5.5 Mapping to prioritize stakeholders and identify appropriate approaches for their participation

"Mapping" stakeholders helps to determine which groups and individual representatives are most important to engage with in relation to the purpose and scope of the participation (see Chapter 4 on identifying objectives). Various methods can be used to map stakeholders. Two common methods are described below: the "rainbow diagram" and the "stakeholder matrix". The method that works best for the context should be used.

5.5.1 Rainbow diagram

The rainbow diagram (see Figure 5.1) is often used to understand the extent to which stakeholder groups are affected compared with the extent to which they are influential.

The rainbow diagram can be adapted to understand any differences between stakeholder groups. For example, the semicircles can be used to identify stakeholder groups working at local, regional and national levels, and the pie-shaped wedges can be used to show the extent to which these groups are affected by the policy. Box 5.3 illustrates how the

FIGURE **5.1**

Rainbow diagram

Source: Adapted from Chevalier and Buckles (2008).
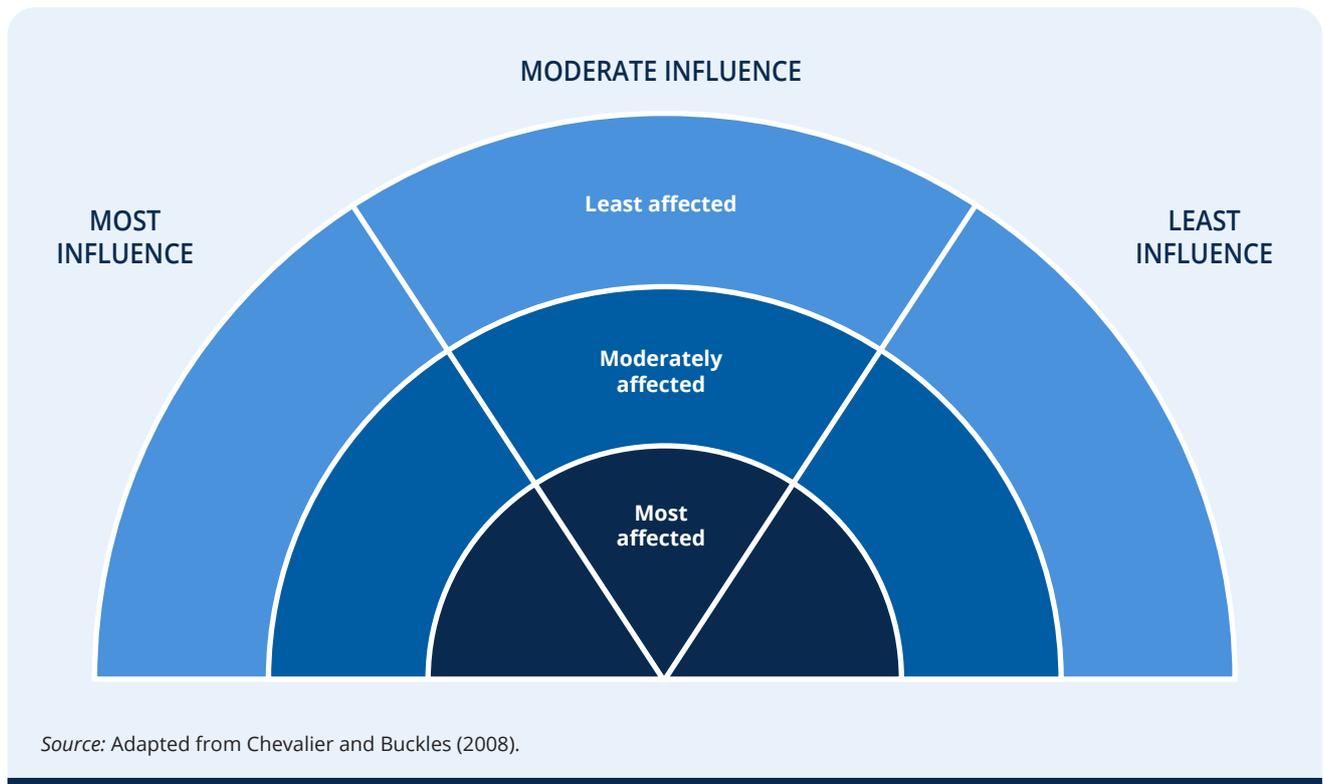
stakeholders of a sustainable development impact assessment were mapped using a rainbow diagram.

Mapping can be based on any of the criteria used to characterize stakeholders. Mapping of stakeholders can be done using several criteria on one diagram or "map" – and may involve several maps to gain better insight. For example, potential stakeholders' level of influence (the pie-shaped wedges in Figure 5.1) can be mapped against their willingness or capacity to engage (in the semicircles), or their knowledge of issues can be mapped against their expectations.

5.5.2 Stakeholder matrix

A "stakeholder matrix" can also be used to map stakeholders by understanding the relationships between the stakeholders and the policy (see Figure 5.2). The level of interest and influence of stakeholders will depend on a range of issues, such as the nature of the policy, the timing and extent of their involvement, and their ability to affect the outcomes.

Figure 5.2 illustrates how the stakeholders of a solar photovoltaic (PV) incentive policy might be mapped on a stakeholder matrix. The stakeholders are mapped according to their level of interest in, and level of influence over, the policy. The eligible sectors for this policy include residential (all types of residential buildings), institutional (schools, health institutions), social sector (community centres, welfare homes, old-age homes, orphanages, common service centres), and commercial and industrial facilities. In the stakeholder matrix, installation is focused on residential buildings; therefore, the relevant stakeholders might have the following levels of interest in, and influence over, the policy:

- **Residential building owners** are likely to have a high interest in, and medium influence over, the policy, given the potential payback they could receive from installing solar panels and the high upfront cost of installation.

- **PV manufacturers** may have a high interest in, and high influence over, the policy, given their interest in selling their product and their

BOX **5.3**

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 Mexican State of Jalisco's Carbon Management Plan, which was developed by the Ministry of Environment and Territorial Development (SEMADET) in cooperation with Carbon Trust. The office buildings of the Sub-Administration of the Ministry of Planning, Administration, and Finance (SEPAF) 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 the rainbow diagram below. The diagram helped identify and classify specific people and groups of people who are both affected by the policy and have influence over the policy to varying levels. This helped identify key impact categories for the assessment.
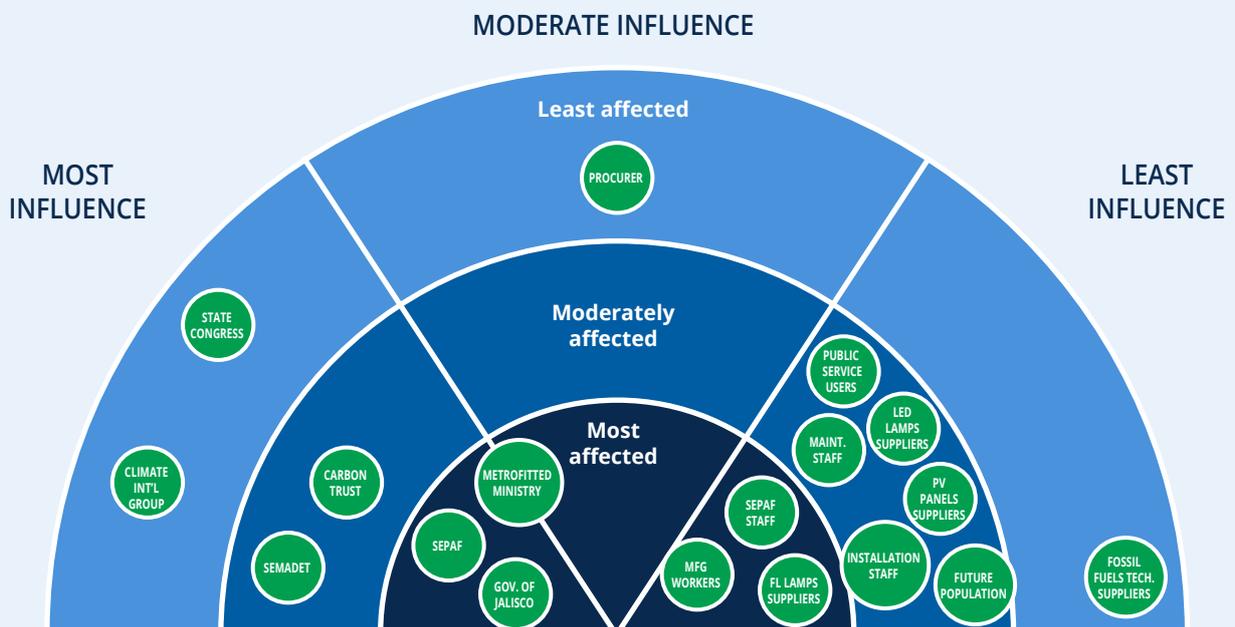
role in producing the product so that the policy can be implemented.

- **Utilities** are likely to have a high interest in, and high influence over, the policy because of their key role in connecting the solar PV installation to the grid and their interest in maintaining their critical role in the energy system.

- **Consumers** are likely to have a relatively low interest in, and low influence over, the policy because they are likely to continue consuming electricity from the grid regardless of the energy source, unless prices increase dramatically or the supply becomes unstable.

The following method can be used when completing a stakeholder matrix:

1. Make a list of stakeholder groups (see Section 5.2 on how to identify stakeholders).

2. Draw a set of two-by-two quadrants with one criterion increasing on the x axis and the other increasing on the y axis.

3. Write the name of each stakeholder group on an index card or post-it note.

4. Rank the stakeholders on a scale of 1 to 5, according to the two criteria in the matrix,

such as "interest in the policy outcomes" or "influence over the policy".

5. Consider the following:

   » Are there any unexpected placements?
   » Which stakeholders have the most and least opportunities to participate?
   » Are there stakeholders for whom additional efforts should be made to ensure engagement?

Boxes A, B and C in the matrix (see Figure 5.2) are the key stakeholders of the policy. The implications of each box are summarized below:

• **Box A.** These stakeholders are important for the policy's success. It is important to construct good working relationships with these stakeholders to ensure an effective coalition of support for the policy. Examples might be senior government officials, politicians or trade unions.

FIGURE **5.2**

Stakeholder matrix

Source: Adapted from Victorian Department of Education and Early Childhood Development (2011).

• **Box B.** The interests of these stakeholders may need to be protected. An example may be marginalized groups such as indigenous peoples, youth or the elderly, who might be beneficiaries of the policy but who have little "voice" in its development.

• **Box C.** These stakeholders can affect the policy outcomes, but their interest in the policy is not necessarily aligned with the overall goals of the policy. An example might be financial administrators with control over funding. These stakeholders could be a barrier to success of the policy, and may need specific monitoring and engagement.

• **Box D.** Limited monitoring and engagement are needed for this group of stakeholders, although they should be kept informed.

The interest or influence of a stakeholder may change as the policy progresses. Therefore, it is important to reassess – to identify new stakeholders and changes in the level of stakeholder participation – at each phase of implementation of the stakeholder participation plan, as discussed in Chapter 4.

Setting clear criteria for mapping stakeholders helps to avoid being driven by non-strategic considerations such as the "noisiest" stakeholders, the short-term focus of the media, or the comfort zone of managers or government personnel.

Initial profiling and mapping can take place without the systematic involvement of stakeholders. However, as planning continues, identified stakeholder representatives should be involved in the stakeholder selection process and adjustments made based on their input.

Box 5.4 illustrates how the stakeholders of a sustainable development impact assessment were mapped using a stakeholder matrix.
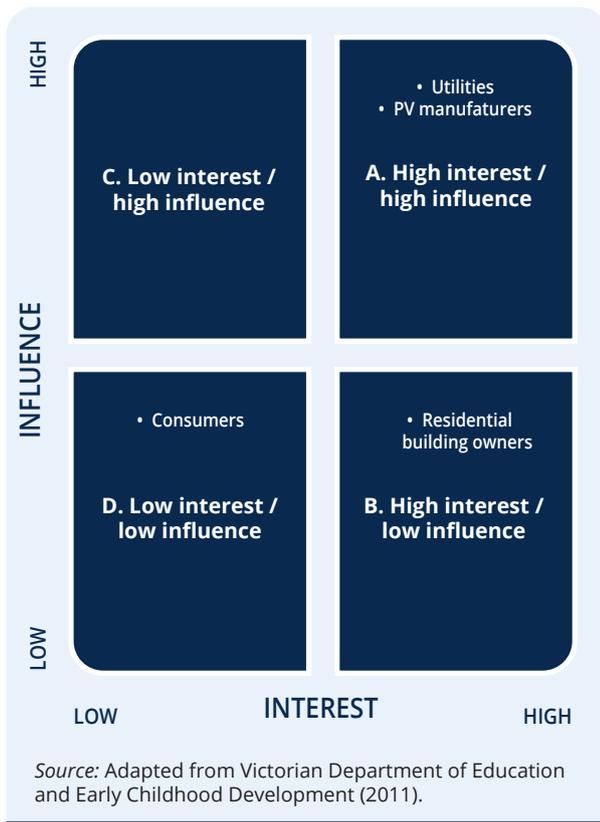
5.5.3 Further references

For guidance on approaches to stakeholder analysis and mapping, see the following references:

• Better Evaluation's "Stakeholder mapping and analysis" provides guidance on identifying

stakeholders to inform data collection and evaluation processes.[26]

- Morphy's *Stakeholder Analysis* provides step-by-step guidance on how to analyse stakeholders by their influence and interest.[27]

- Requirements Techniques' "Stakeholder power/interest analysis" provides step-by-step guidance for using the stakeholder matrix to identify stakeholders.[28]

BOX **5.4**

Participatory identification and mapping of stakeholders in Kenya

A stakeholder identification and mapping exercise was conducted to prepare for an assessment of potential sustainable development impacts of a policy to reduce emissions by shifting freight from road to rail between Mombasa (port) and Nairobi (capital city) in Kenya. The identification and mapping were conducted as a participatory exercise by a group of stakeholders from relevant government departments and NGOs at a workshop hosted by the Climate Change Directorate of the Ministry of Environment and Forestry in October 2018.

The photo below shows participants at the workshop.

Source: © Joanna Durbin/Conservation International

The workshop participants followed the methods outlined in this chapter for completing a stakeholder matrix, by identifying a long list of stakeholder groups (see table below), and assigning a level of interest and influence on a scale from 1 (lowest) to 5 (highest) to each group.

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[26] Available at: http://betterevaluation.org/en/evaluation-options/mapping_stakeholders.

[27] Available at: www.stakeholdermap.com/stakeholder-analysis.html.
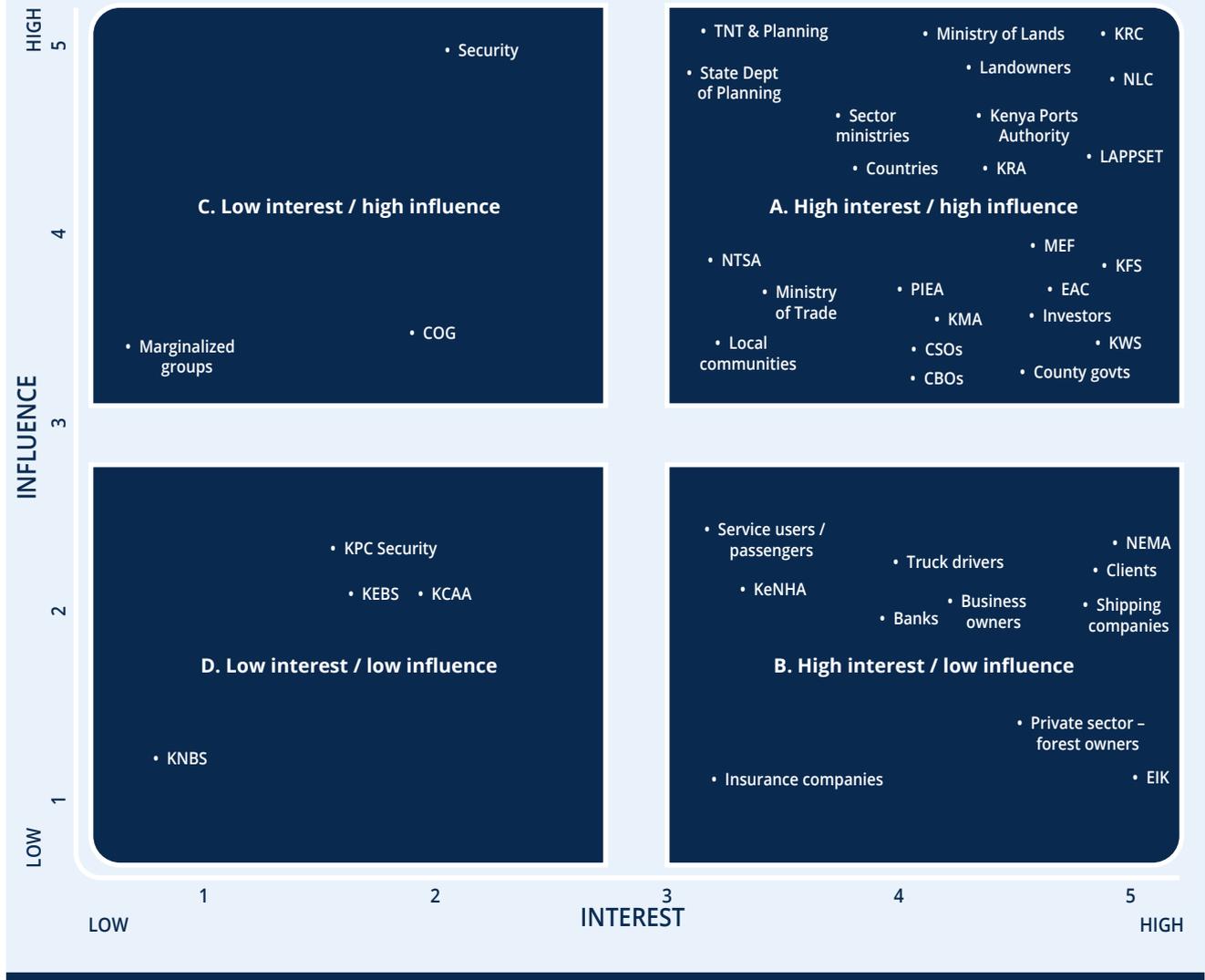
[28] Available at: https://www.stakeholdermap.com/.

Participatory identification and mapping of stakeholders in Kenya

Stakeholders	Interest	Influence	Stakeholders	Interest	Influence
Kenya Ports Authority	5	4	Drivers (trucks)	4	2
County governments	5	3	Kenya Pipeline Company (KPC) security	2	2
Local communities	3	3	Security	2	5
Kenya Revenue Authority (KRA)	4	4	Ministry of Trade	3	3
Kenya Railways Corporation (KRC)	5	5	Kenya Civil Aviation Authority (KCAA)	2	2
National Transport & Safety Authority (NTSA)	3	3	Kenya Maritime Authority (KMA)	4	3
National Land Commission (NLC)	5	5	Shipping companies	5	2
Kenya Wildlife Service (KWS)	5	3	Insurance companies	3	1
Kenya Forest Service (KFS)	5	3	Petroleum Institute of East Africa (PIEA)	4	3
Ministry of Environment & Forestry (MEF)	5	3	Kenya Bureau of Standards (KEBS)	2	2
National Environment Management Authority (NEMA)	5	2	Kenya National Bureau of Statistics (KNBS)	1	1
Environmental Institute of Kenya (EIK)	5	1	Banks	4	2
Private sector (forest owners)	5	1	Landowners	5	5
Kenya National Highways Authority (KeNHA)	3	2	East African Community (EAC)	5	3
The National Treasury (TNT) & Planning	3	5	Lamu Port (LAPPSET) Corridor Development Authority	5	4
Investors	5	3	Business owners	4	2
Civil society & community-based organisations (CSOs and CBOs)	4	3	Council of governments (COG)	2	3
Clients	5	2	Marginalized groups	1	3
Service users/passengers	3	2	State Dept of Planning	3	5
			Ministry of Lands	4	5
			Sector ministries	4	4
			Countries	4	4

BOX **5.4,** continued

Participatory identification and mapping of stakeholders in Kenya

The stakeholders were plotted on a matrix (see below) to help plan appropriate levels of engagement for the sustainable development assessment, and for design and implementation of the policy more broadly.

C. Low interest / high influence • Security • Marginalized groups • COG	**A. High interest / high influence** • TNT & Planning • Ministry of Lands • KRC • State Dept of Planning • Landowners • NLC • Sector ministries • Kenya Ports Authority • Countries • KRA • LAPPSET • NTSA • MEF • KFS • Ministry of Trade • PIEA • EAC • KMA • Investors • Local communities • CSOs • KWS • CBOs • County govts
D. Low interest / low influence • KPC Security • KEBS • KCAA • KNBS	**B. High interest / low influence** • Service users / passengers • NEMA • Truck drivers • Clients • KeNHA • Business owners • Shipping companies • Banks • Private sector – forest owners • Insurance companies • EIK

INFLUENCE — LOW 1, 2, 3, 4, 5 HIGH

INTEREST — LOW 1, 2, 3, 4, 5 HIGH

5.6 Identifying legitimate stakeholder representatives

It is a *key recommendation* to establish a participatory process for identifying legitimate representatives of stakeholder groups. Stakeholder representatives are important to facilitate the participation of larger stakeholder groups. They can disseminate information to, and receive information from, the members of these groups.

When identifying stakeholder representatives, it is important to ensure that these individuals are indeed true representatives of their constituents, and can be relied upon to faithfully advocate for them and communicate information back to them. Stakeholder representatives should have sustained interest and time to engage in the participation process and to communicate with their stakeholder group, as well as the capacity and resources to fulfil their role.

Stakeholder groups should select their own representatives through a mechanism that they define based on agreed criteria, by-laws and norms. Provision should be made to enable representatives to share and receive information, and to discuss issues with their constituents, to ensure effective participation.

One way to validate legitimacy of representatives is by talking directly to a sample of the stakeholders to assess how well (or perhaps how inconsistently) stakeholder views are being represented. Another way is to validate that stakeholders have indeed transparently selected their own representatives.

5.7 Enhancing opportunities for, and reducing barriers to, stakeholder participation

It is a *key recommendation* to identify the opportunities and barriers affecting the participation of different stakeholders, particularly for women, indigenous peoples, youth and other groups that may be marginalized, and involve these stakeholders in identifying appropriate methods and approaches to enable their effective participation. Barriers to participation can reduce the effectiveness of stakeholder participation. Although it may not be possible to remove all barriers, it is important to make efforts to enhance participation of stakeholders. Being respectful of differences and acknowledging that invisible barriers to communication exist are critical.

Identify opportunities to increase participation and reduce barriers to participation of each stakeholder group through initial profiling of stakeholder groups and ongoing adjustment in discussion with members of each group. This includes knowing how information is best provided to each stakeholder group; their needs for timely and continuous capacity-building; the most effective methods for conducting inclusive, socioculturally sensitive and gender-sensitive consultations; and the resources needed to facilitate participation. Consult participants about what might prevent or hinder their participation, and what arrangements can be made for them to feel comfortable and to become involved.

Examples of barriers to participation and ways to address them include the following:

- **Information.** Stakeholders may not have adequate information about the policy, the process or the substantive issues to participate effectively. Information needs to be in an appropriate format and language, using concepts that the stakeholders understand. Chapter 7 discusses how to provide information to various stakeholder groups based on their circumstances.

- **Capacity.** Stakeholders may not have the knowledge, understanding or skills required for effective participation, either as an individual or as a representative. Education, training and public awareness may be needed to build the capacity of stakeholders to participate effectively. Where experienced people and resources for capacity-building are limited, supportive partnerships can sometimes be developed with national or international NGOs, universities, consulting companies, or bilateral or multilateral agencies.

- **Accessibility.** Stakeholders may lack access to technology (e.g. the Internet), face certain social or cultural constraints, or be in locations that are not conducive to participating in meetings or written consultations, online or otherwise. To address such constraints, hold meetings at a time and location that suit the stakeholder groups, and use approaches and technologies that are familiar to them and that they can access easily. Identify socioculturally appropriate and gender-sensitive approaches that provide a safe setting for women and men of all ethnicities and political affiliations. For example, this may involve holding separate consultation meetings with women or other groups.

- **Financial and other resources.** Stakeholders may not have adequate resources to travel and participate in consultations. Support for transportation, accommodation and food may be necessary for certain groups to participate. Other forms of compensation, including cash payments (e.g. daily sitting allowances or per diems), should be considered cautiously, because they could potentially influence, or be perceived to influence, stakeholders' input.

- **Timing.** The schedule should allow sufficient time for stakeholders to share information, provide or receive feedback, and participate in consultations. Ensure that sufficient time is provided for effective stakeholder participation in the design, implementation and assessment processes. Chapter 4 discusses how to plan for stakeholder participation, including the timing for each element of effective participation.

Try to include representatives of all stakeholder groups equitably. This may require providing education and support to certain stakeholder groups to level the playing field across all groups. Use the stakeholder identification and mapping processes to determine the barriers faced by each group, and then minimize the barriers as much as possible.

5.7.1 Further references

For methods aimed at increasing the participation of women, see the following references:

- United Nations Framework Convention on Climate Change (UNFCCC) "Gender and climate change capacity-building"[29]

- European Institute's *Gender Equality and Climate Change: Report*[30]

- Governance and Social Development Resource Centre's *Gender and Climate Change: Overview Report*[31]

- UNDP's *Guidance Note on Gender Sensitive REDD+*[32]

- Global Landscapes Forum's "How to walk the talk: promoting gender equality in national climate policy and action".[33]

For methods aimed at overcoming barriers relating to language and ethnicity, or based on the stakeholders' history, location and jurisdiction, see the following references:

- UNFCCC's *Report on Good Practices of Stakeholder Participation in Implementing Article 6 of the Convention*[34]

- Organisation for Economic Co-operation and Development's *Encouraging Increased Climate Action by Non-Party Stakeholders*.[35]

For methods aimed at overcoming barriers that can divide stakeholders based on differentials in power, wealth and access to resources, refer to:

- Moser and Ekstrom's "A framework to diagnose barriers to climate change adaptation".[36]

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29   Available at: http://unfccc.int/gender_and_climate_change/items/9690.php.

30   Available at: https://eige.europa.eu/publications/gender-equality-and-climate-change-report.

31   Available at: www.gsdrc.org/go/display&type=Document&id=4305.

32   Available at: www.undp.org/content/undp/en/home/librarypage/womens-empowerment/guidance-note-gender-sensitive-redd-.html.

33   Available at: https://archive.globallandscapesforum.org/glf-marrakesh/agenda-item/day-one/discussion-forum-3/how-to-walk-the-talk-promoting-gender-equality-in-national-climate-policy-and-action/.

34   Available at: http://unfccc.int/resource/docs/2014/sbi/eng/03.pdf.

35   Available at: www.oecd-ilibrary.org/environment/encouraging-increased-climate-action-by-non-party-stakeholders_5jm56w74s5wg-en.

36   Available at: www.weadapt.org/sites/weadapt.org/files/legacy-new/knowledge-base/files/952/5241a63f0f66cpnas-2010-moser-1007887107.pdf.