Just Energy Transition in Coal Regions

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Handbook on Economic Diversification for Coal Regions in Transition

A guide for strategy development – evidence based and participatory

The Federal Government

IKI INTERNATIONAL CLIMATE INITIATIVE

Co-funded by the European Union

GPI GLOBAL POLICY INCUBATOR empowering transformation.

The purpose of the handbook

Countries worldwide are **increasingly adopting Just Transition processes to phase out coal – and many more are preparing for these processes.** While these efforts contribute to climate action, it is crucial to address the social and economic challenges and minimise the negative effects faced by affected communities. **To effectively prepare for Just Transition processes**, **countries and regions need to reduce their dependence on coal continuously and to diversify their economies** towards sectors and activities that deliver economic prosperity, social well-being, and environmental sustainability. **The start of the implementation of such an economic diversification strategy even before coal phase out started can prepare a region for this process** and ease the social and political challenges.

This handbook **serves as a practical guide for policy practitioners to develop strategies for economic diversification**. The **first chapter covers conceptual considerations** about Just Transition and the importance of developing economic diversification strategies to prepare for Just Transition and coal phase out, as well as the principles of evidence-based and participatory processes in strategy design. Chapter II-VI **focus on methodologies, tools and processes** for elaborating a thorough diagnosis of the current state of economic diversification, establishing key objectives for economic diversification, identifying economic diversification opportunities and creating an action plan, along with a monitoring and evaluation framework to assess impact.

This **structured approach aims to provide step-by-step guidance for effectively developing economic diversification strategies** that promote a sustainable and inclusive transition.

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How to work with the handbook – for different users (I)

a. **Policy makers working at the level of strategic planning: conceptional orientation**

   For those **working at the strategic level**, the **Handbook on Economic Diversification for Coal Regions in Transition** provides a concise overview of the conceptual foundations of Just Transition and economic diversification, along with theoretical guidance on the processes required to design an economic diversification strategy that supports countries and regions throughout the transition.

b. **Policy practitioners at a technical/operative level**

   In addition, the handbook is **designed to assist policy practitioners at a technical/operative level** by offering a step-by-step practical guide to developing an economic diversification strategy. It presents specific methodologies, tools, approaches, and case studies to conduct analysis and enable an evidence-based and participatory process.

How to work with the handbook – for different users (II)

To meet the needs of different audiences, the handbook is available in two versions:

a. **A summary version for policy practitioners at the strategic level,** which compiles key messages from each chapter

b. A complete, **detailed version for policy practitioners at the technical level**, providing practical guidance to design an effective economic diversification strategy.

Acknowledgements

The Innovation Regions for a Just Energy Transition (IKI JET) project is jointly funded by the International Climate Initiative (IKI) of the Federal Government of Germany and by the European Commission's Directorate-General for International Partnerships (DG INTPA) for the Just Energy Transition in Coal Regions Interregional Platform (JET-CR). The project duration is from December 2022 - January 2027 and is implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Climate Action Network (CAN), International Institute for Sustainable Development (IISD), International Labour Organisation (ILO), Solidarity Center, Union Aid Abroad – APHEDA, and Wuppertal Institute für Klima, Umwelt, Energie GmbH.

IKI JET and its JET-CR Platform aim to support and accelerate just energy transitions away from coal to renewable energies and other sustainable economic activities in Colombia, Chile, South Africa, Indonesia, Vietnam, Thailand, and Mongolia.

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This publication was produced by the International Climate Initiative of the Federal Government of Germany and the European Union. Its contents are the sole responsibility of their authors and do not necessarily reflect the views of BMWK, the EU or GIZ.

Who is behind the handbook?

One of the key activities of the IKI JET project is to support stakeholders in coal regions to implement just transition from coal to green economy. One of the key tools that we provide for actors in the partner regions is the development of a Handbook on Economic Diversification for Coal Regions in Transition. The handbook aims to guide practitioners in designing evidence-based and participatory strategies that foster commitment and ownership of the transition process.

The handbook was prepared by the Global Policy Incubator (GPI) within the framework of the IKI JET project and under the guidance of GIZ. GPI is a German organisation specialised in supporting policy and strategy formulation through participatory, evidence-based, and capacity-building approaches, with particular expertise in advancing socio-ecological transformation.

The author of the handbook is María Elena Ayala and co-authors are Philipp Neuerburg and Thomas Bernhardt, GPI
For information about GPI, go to: https://www.gpi-policy.com/

The handbook was edited by Götz von Stumpfeldt, GIZ

Who supported the elaboration of the handbook?

This handbook is based on the experience of practitioners working in the promotion of Just Transition in Coal Regions.

Many thanks go to colleagues who supported us in elaborating the different tools and methodologies in coal regions, that are working with us in the IKI JET Project. We would like to thank Ade Cayhat, Fajar Lizmawan, Wardah Nyimas, Tomas Andres Jil Breytmann and Veronica Vukasovic for there great support in the elaboration of the Handbook in the IKI JET project regions.

Special thanks goes to colleagues that revised the draft and helped us with their exceptional conceptional knowledge: Hans Joachim Zinnkann from GIZ, Timon Wehnert, Jannis Beutel and Joachim Fünfgelt from the Wuppertal Institute.

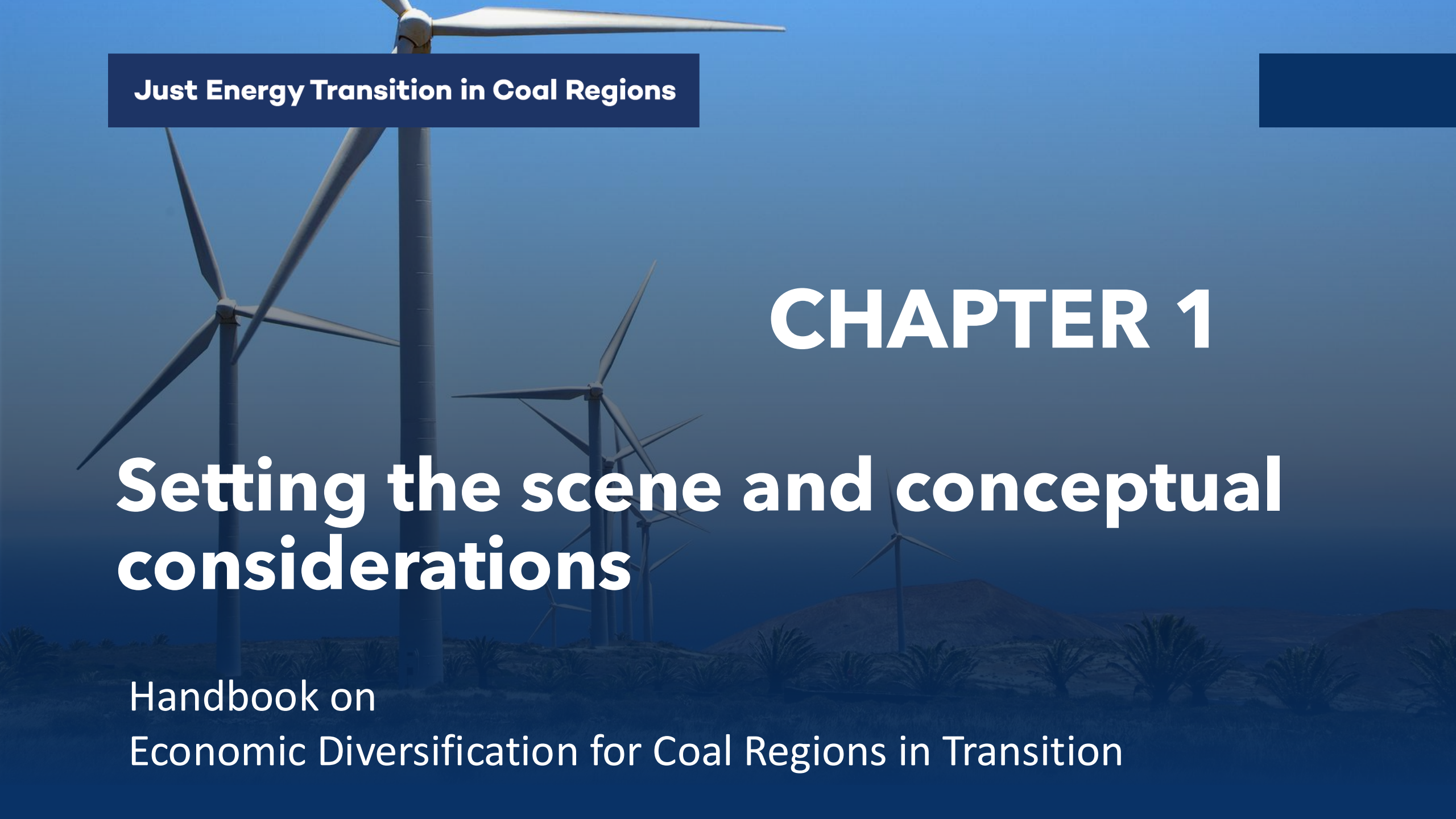
Where is the handbook available?

The handbook is shared on the JET-CR Knowledge Hub. The Just Energy Transition in Coal Regions (JET-CR) Knowledge Hub is an online platform building bridges between experts, policymakers, coal industry, trade unions and civil society organizations. It's a space to bring together different perspectives, share real stories and search for effective tools and solutions.

It aims to particularly amplify the voices of workers and communities dependent on coal showing how knowledge can work in practice. It also turns practice into knowledge by bringing local experience into global conversations and advancing just energy transition expertise.

Providing regular digests of articles, research papers, news stories and events it serves as a "one stop shop" for collecting up to date information related to just energy transitions away from coal around the world.

https://www.jetknowledge.org/



Just Energy Transition in Coal Regions

CHAPTER 1

Setting the scene and conceptual considerations

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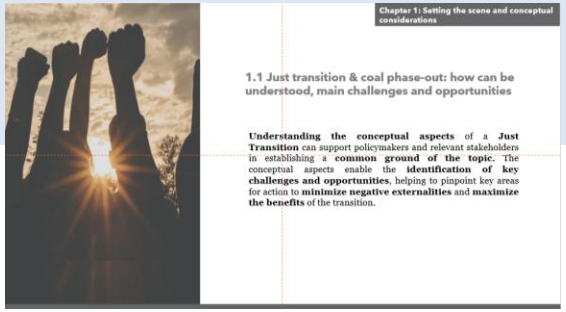
Key messages

Just Transition & coal phase-out: how can it be understood, main challenges and opportunities

- The **climate crisis** is compelling economies to adopt increasingly **ambitious commitments** to accelerate the **shift away from fossil fuels toward energy systems based on renewable sources.** In response, **countries are implementing Just Transition processes** that **maximise the social and economic opportunities of climate action** while effectively managing its challenges to **ensure that no one is left behind.**

- **Key challenges associated with a Just Transition** include decarbonisation and sectoral transformation of the economy, energy security, investment and financing, long-term engagement from strategic actors, and the need for robust planning and participatory processes. At the same time, **this transition offers significant opportunities** such as diversifying and local economies, retraining and upskilling workers, developing communities and infrastructure, improving access to finance and green investment, and strengthening the resilience and empowerment of local communities.

For more information about conceptual aspects, challenges and opportunities of Just Transition, refer to **Section 1.1.**



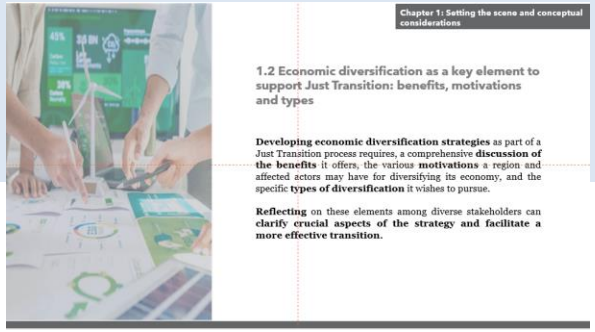
Key messages

Regional economic diversification as a key element to support Just Transition: benefits, motivations and types

- **Economic diversification is a key element to support and prepare for a Just Transition**, to reduce the dependence on a carbon-based sector, such as coal and related industries and prepare for a transformation to a carbon-free economy. It also enhances resilience to external shocks; fosters skills development, innovation and entrepreneurship; strengthens social development and inclusion and helps close economic and social gaps.

- **Depending on the regional context and priorities**, economic diversification may have different **motivations** (related to socio-economic or environmental aspects (or both) and pursue different **types** (intra-sectoral and/or intersectoral).

For more information about benefits, motivations and types of economic diversification, refer to **Section 1.2.**

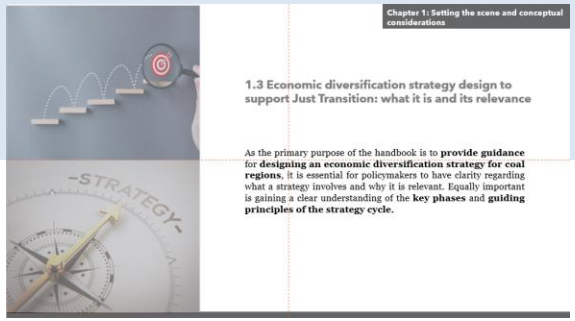


Key messages

Economic diversification strategy design to support Just Transition: what it is and its relevance

- **An economic diversification strategy** is a structured document designed **to guide regional decisions and choices to plan its transition process effectively** and ensure that all the actors from the economy (industries, workers, investors, communities) are secure and can get benefits.
- **Designing an economic diversification strategy involves a series of phases** that together create a robust framework for effective implementation: a) diagnostic of the current state of economic diversification, b) defining objectives of economic diversification, c) identifying diversification opportunities, d) defining an action plan for diversification, and e) monitoring and evaluation of actions.
- In addition**, strategy design must be guided by key principles** such as **a) evidence-based analysis,** and **b) good governance** (including multi-level collaboration within government and active participation of key stakeholders).

For more information about strategy design, phases and principles, refer to **Section 1.3.**



Key messages

Evidence based approach for strategy design: use of quantitative and qualitative information

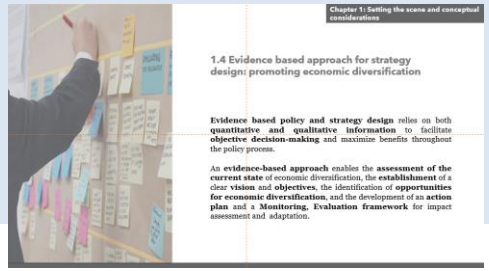
- **An evidence-based approach** is a **fundamental principle** for **effective strategy design.** It relies on **robust data, analysis, and information to understand the regional situation — ensuring decisions are well-informed and context-specific**. In the case of economic diversification**, evidence-based strategies integrate both quantitative and qualitative tools** to assess current situation, identify constraints, set clear objectives, and identify diversification opportunities.

- Moreover, this approach remains **essential throughout the strategy cycle** as **baseline indicators enable effective monitoring and evaluation,** helping to track progress, adjust interventions, and measure the impact of policy actions over time.

- This **Handbook focuses more** on the following **quantitative tools** to support strategy design.

Improving the Quality of Industrial Policies EQuIP (GIZ-UNIDO)	**Diversifying Industries & Value Chains for Exports** DIVE (UNIDO)
Sectoral Assessment and Prioritisation SAP (GPI)	**Atlas of Complexity** (HKS)

For more information about evidence-based approach for strategy design and quantitative methods and the required resources for their application, refer to **Section 1.4.**

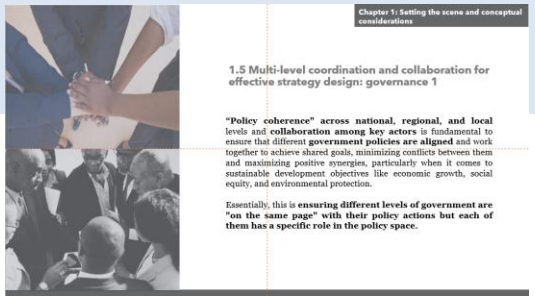


Key messages

Multi-level coordination and collaboration for effective strategy design: governance 1

- **Multi-level coordination among government institutions is a core principle of effective strategy design. It ensures policy coherence across national, regional, and local levels, enabling different government policies are aligned and work together to achieve shared goals.**
- However, achieving **effective multi-level coordination and vertical policy coherence can be challenging**. Common **obstacles** include **political fragmentation, institutional capacities constraints, geographical fragmentation, and limited intergovernmental collaboration**.

  For more information about multi-level coordination among government institutions including challenges and mechanisms to address them, refer to **Section 1.5.**



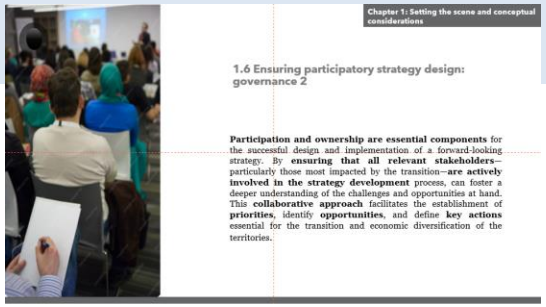
Key messages

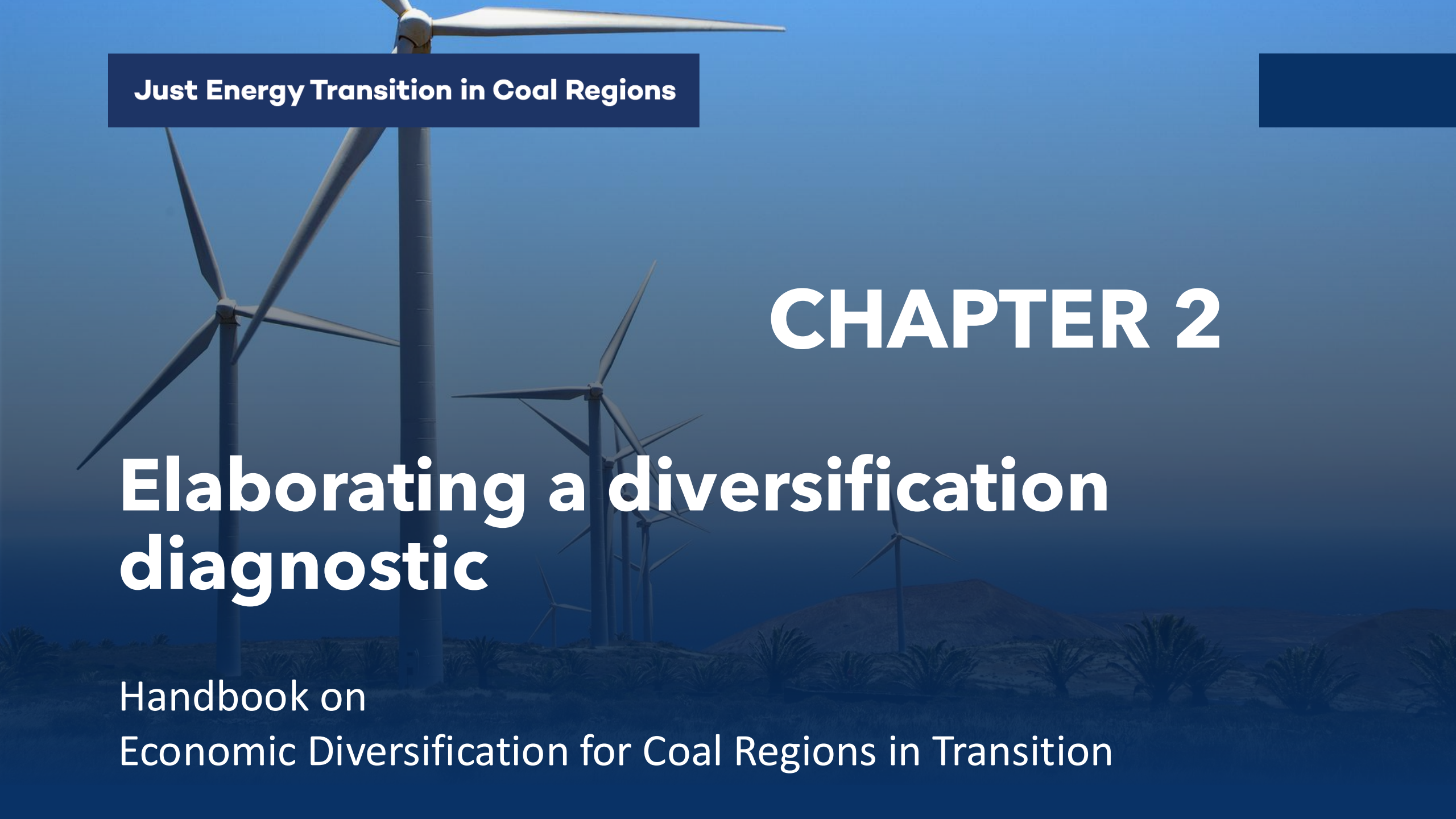
Ensuring participatory strategy design: governance 2

- **The active participation of key stakeholders is a fundamental principle in strategy design**. It enables a deeper understanding of the specific **challenges and opportunities faced by those most affected by the transition**. This collaborative approach helps to **define priorities and objectives, identify viable opportunities, and shape key actions** that are essential for a successful Just Transition and the economic diversification of territories.

- **In the context of economic diversification strategy design, key stakeholders include** government institutions at all levels, private sector representatives, academic and research institutions, civil society organisations and NGOs, local communities, trade unions and worker organisations, women, youth, and other marginalised groups, as well as donors and development cooperation agencies.

For more information about strategy design, phases and principles, refer to **Section 1.6.**





Just Energy Transition in Coal Regions

CHAPTER 2

Elaborating a diversification diagnostic

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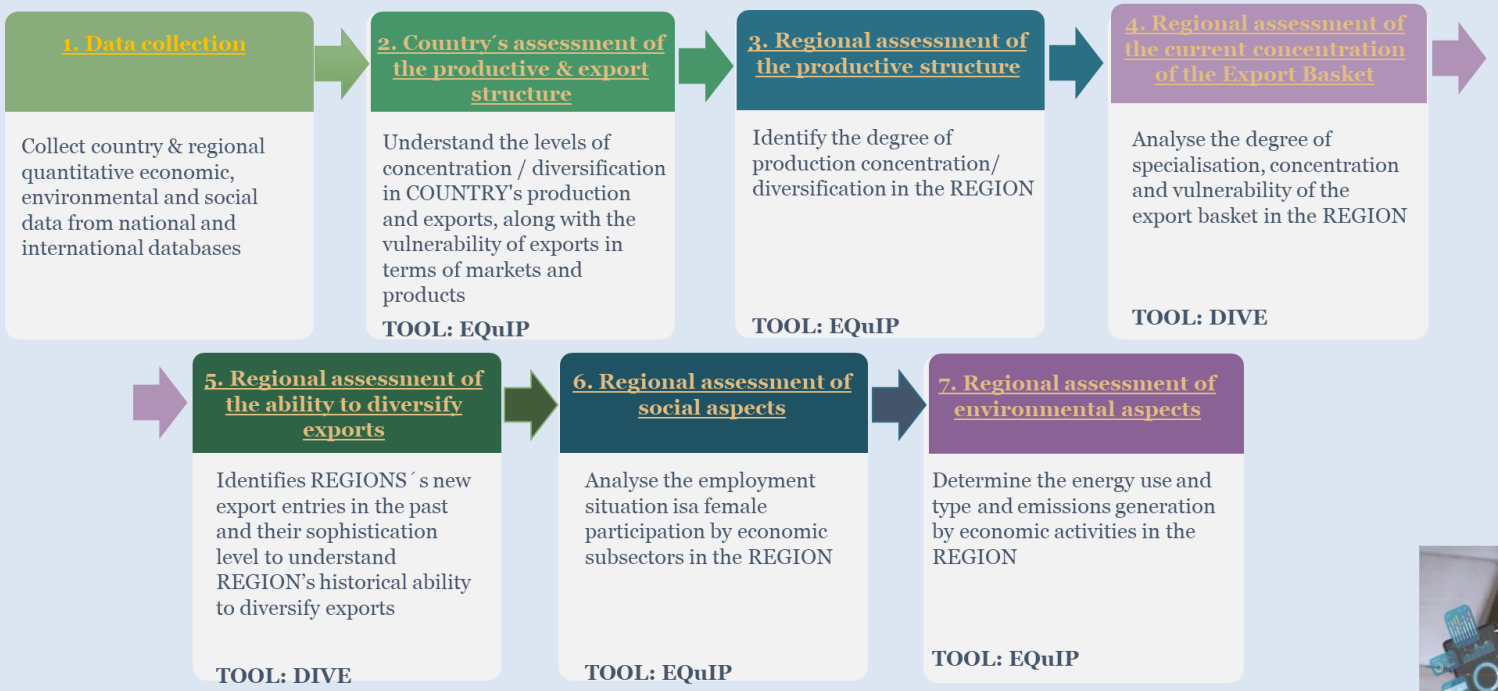
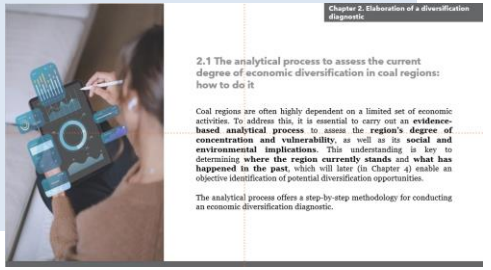
Key messages

The analytical process to assess the current degree of economic diversification in coal regions: how to do it

- Assessing the concentration and vulnerability of coal regions including their social and environmental implications is essential to understand **where the region currently stands** and **what has happened in the past. The Handbook proposes a sequential step-by-step process to conduct the assessment using indicators from EQuIP and DIVE tools.**



For more information about why the sequential steps are useful, refer to **Section 2.1.**



Key messages

Indicators to assess the degree of economic diversification in coal regions and social and environmental implications: examples based on case studies

- Empirical evidence shows that **coal-based regions** typically display a **high concentration of production and exports**. As these regions prepare for the **coal phase-out**, it is **essential to design an evidence-based economic diversification strategy**. This requires **applying a range of indicators not only to measure the degree of concentration in the coal sector**, but also to identify **other sectors that drive the regional economy and could provide future opportunities for diversification**. The assessment further aims to capture the **social and environmental implications of the current economic structure**, thereby providing a stronger foundation for the diversification strategy.

- This chapter of the **handbook introduces a battery of 13 indicator**s proving a **step-by-step guidance** to conduct the analysis

For more information about the indicators, their interpretation and logic, method of calculation, sources, and data required, refer to Section 2.2.

Key messages

Quantitative tools to assess the degree of economic diversification in coal regions: introducing EQuIP and DIVE

- This handbook introduces two main quantitative tools to assess the degree of economic diversification in coal regions that offer a battery of indicators

Enhancing the Quality of Industrial Policies (EQuIP)

Economic performance

TOOL 3
Diversification and upgrading

Social performance

TOOL 5
Income and employment

TOOL 6
Gender equality

Environmental performance

TOOL 7
Industry and Environment

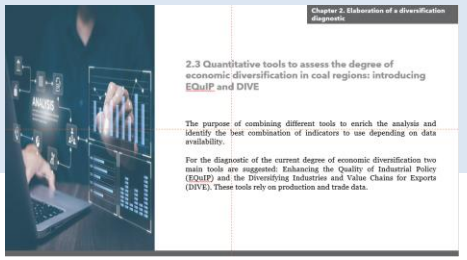
UNIDO-GIZ. Supports the formulation of participatory, evidence-based policies and strategies for inclusive and sustainable industrial development.

Diversifying Industries and Value Chains for Exports (DIVE)

COMPONENT 1
Concentration, specialisation, vulnerability and sophistication of the current Export Basket

COMPONENT 2
Exports diversification ability (new permanent entries in the historical Export Basket)

UNIDO. Supports the design of diversification policies and helps address a key question about the direction an economy should take: Is it desirable to diversify exclusively into new products that rely on the existing set of capabilities and are linked to available resources (related products)? Or is it feasible to develop new specialisations in products that bear little similarity to the country's current productive structure (unrelated products)?



For more information about the tools, refer to Section 2.3.

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CHAPTER 3

Defining objectives for economic diversification strategies

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Key messages

Policy objectives for economic diversification strategies: What they are, relevance, characteristics, steps

- **Policy objectives** for economic diversification in a region can be defined as **specific, measurable goals** that relate to distinct dimensions of the desired diversification process. They **outline expected outcomes and strategic direction for economic diversification within the just transition process.** In other words, to support the achievement of a sustainable economy that harmonises economic performance with environmental sustainability and social welfare.

- To **be effective**, policy objectives must adhere to **key characteristics**, including **specificity, measurability, achievability, relevance, and time-bound nature.** The development and prioritisation of these objectives should follow **four main steps**:
  - ✓ **Refer to national and regional major goals**, identifying those that address climate change, decarbonisation and support a just transition.
  - ✓ **Examine the economic diversification diagnostic (see Chapter 2*)*** to summarise main challenges based on the current landscape.
  - ✓ **Propose preliminary regional objectives** based on key identified challenges.
  - ✓ **Consult stakeholders** and conduct a prioritisation exercise to refine and validate the objectives.

For more details about policy objectives and the process for establishing them, **refer to Section 3.1**

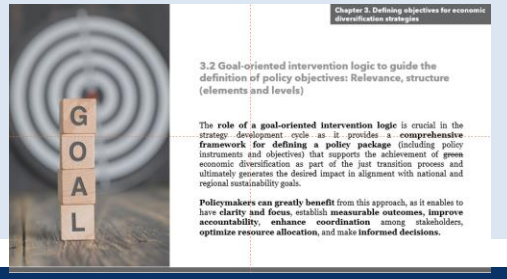
Key messages

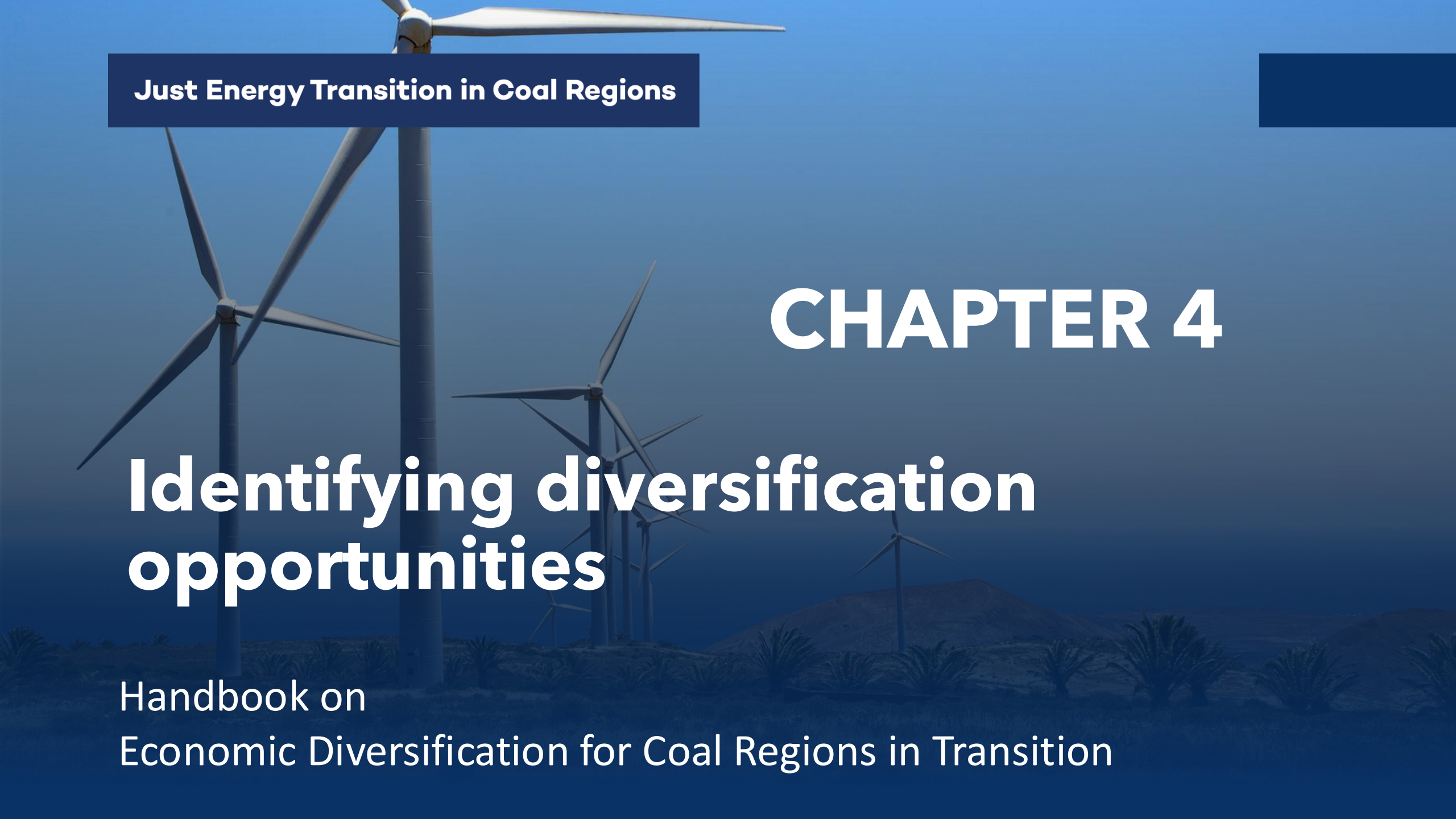
Goal-oriented intervention logic to guide the definition of policy objectives: Relevance, structure (levels)

- A goal-oriented intervention logic provides policymakers with a **clear and structured framework for designing policy packages** in a strategy development process. It operates across **three sequential levels** and emphasises the need to:
  - ✓ **map relevant national and regional goals,** that in our area of interest, are related to climate change, decarbonisation, and just transition.
  - ✓ **define regional objectives to promote economic diversification** within a just transition process that **must be aligned to these overarching goals** (refer to the steps introduced in the previous slide).
  - ✓ **establish appropriate policy instruments** to directly contribute to achieving these objectives **(see Chapter 5)**.

The **alignment of the three levels** of the intervention logic ensures policy coherence, consistency and effectiveness in the implementation process.

For more information of a goal-oriented intervention logic, refer to **Section 3.2.**





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CHAPTER 4

Identifying diversification opportunities

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Key messages

Main methods to identify diversification opportunities to phase-out coal: Quantitative and qualitative tools characteristics and resources required

Characteristics of quantitative tools

Sectoral Assessment and Prioritisation (SAP)
GPI tool

- Based on **country/regions production and export structure**
- Considers a **variety of criteria for prioritisation** (i.e. economic, social environmental & cross-cutting issues)
- Focus on **short-medium term opportunities on existing sectors**
- **Medium** analytical **complexity** and **high adjustability**

Diversifying Industries & Value Chains for Exports (DIVE)
UNIDO tool

- Based on **country/regions exports**
- Considers **export potential for identification of opportunities** and suggests additional trade criteria for prioritisation (i.e. sophistication gain, vulnerability, demand potential, demand growth)
- Distinguishes **short and longer-term new opportunities**
- **High adjustability** but **high** analytical **complexity**

Atlas of Economic Complexity
HKS tool

- Based on **global/country export data**
- Considers **export potentials** for a preliminary identification of economic opportunities (not other criteria)
- Strong focus on comparative advantages of countries. Distinguishes **short and longer-term new opportunities**
- Easy to use but limited adjustability

Characteristics of qualitative tools

Participatory Appraisal of Competitive Advantage (PACA)
GIZ tool

Based on:

- **secondary literature** review,
- intermediate **participatory processes** (i.e. workshops) to pre-define strategic sectors
- **primary information collection** through interviews and mini-workshops to learn more about the local economy and sectors
- **final participatory process** (i.e. workshop) to prepare a diagnostic of the local economy and develop short and medium-term projects relevant to the identified economic sub-sectors.

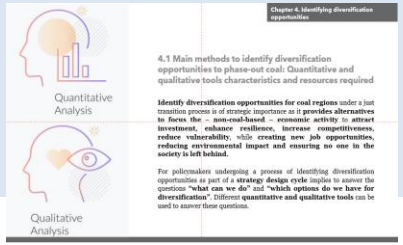
University of Indonesia methodology

Based on:

- **secondary literature** review (desk research)
- **primary information collection** through interviews to specify the goods and services that supported regions should consider in their diversification strategies
- **participatory processes** through focus groups discussions

- For **coal-based regions undergoing a just transition to phase out coal mines and/or coal power plants**, it is essential to **identify potential opportunities for economic diversification** to address two key questions: **"what can they do" and "which options do they have for diversification".**
- This process should adopt a **mixed-methods approach** that integrates **quantitative and qualitative tools**. By doing so, it ensures that results and decision-making are based on robust, objective information while also considering the interests, motivations, strengths, and challenges faced by the territories and local communities most affected by the transition.

For more information about resources required to implement the quantitative tools, refer to **Section 4.1**

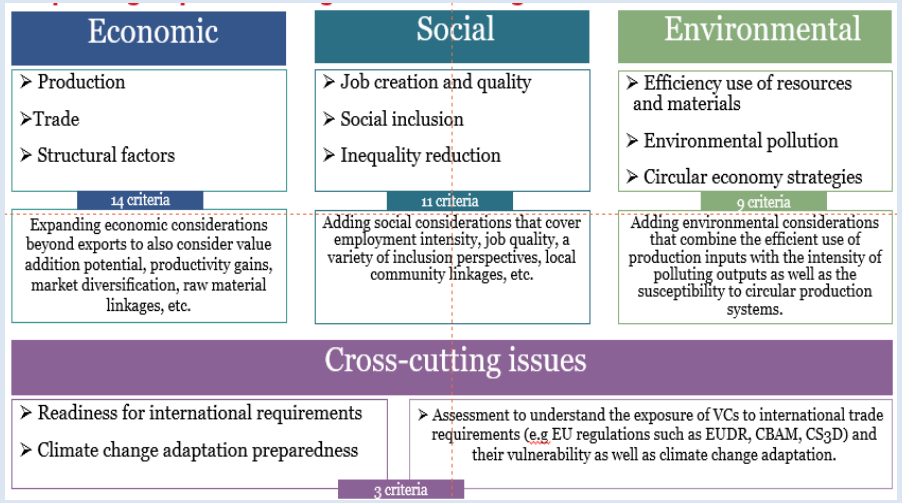


Key messages

Quantitative tools to identify diversification opportunities: SAP, DIVE, and the Atlas of Complexity methodologies

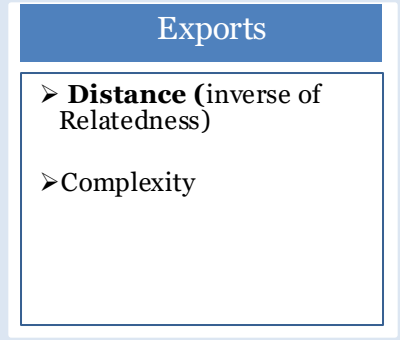
As part of the **quantitative tools** this Chapter shares three main methodologies that uses different criteria for the assessment:

SAP (GPI tool)

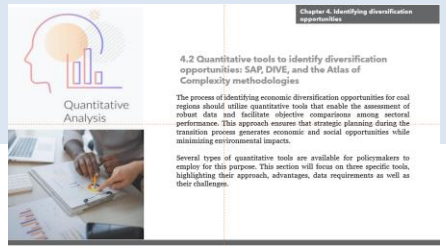


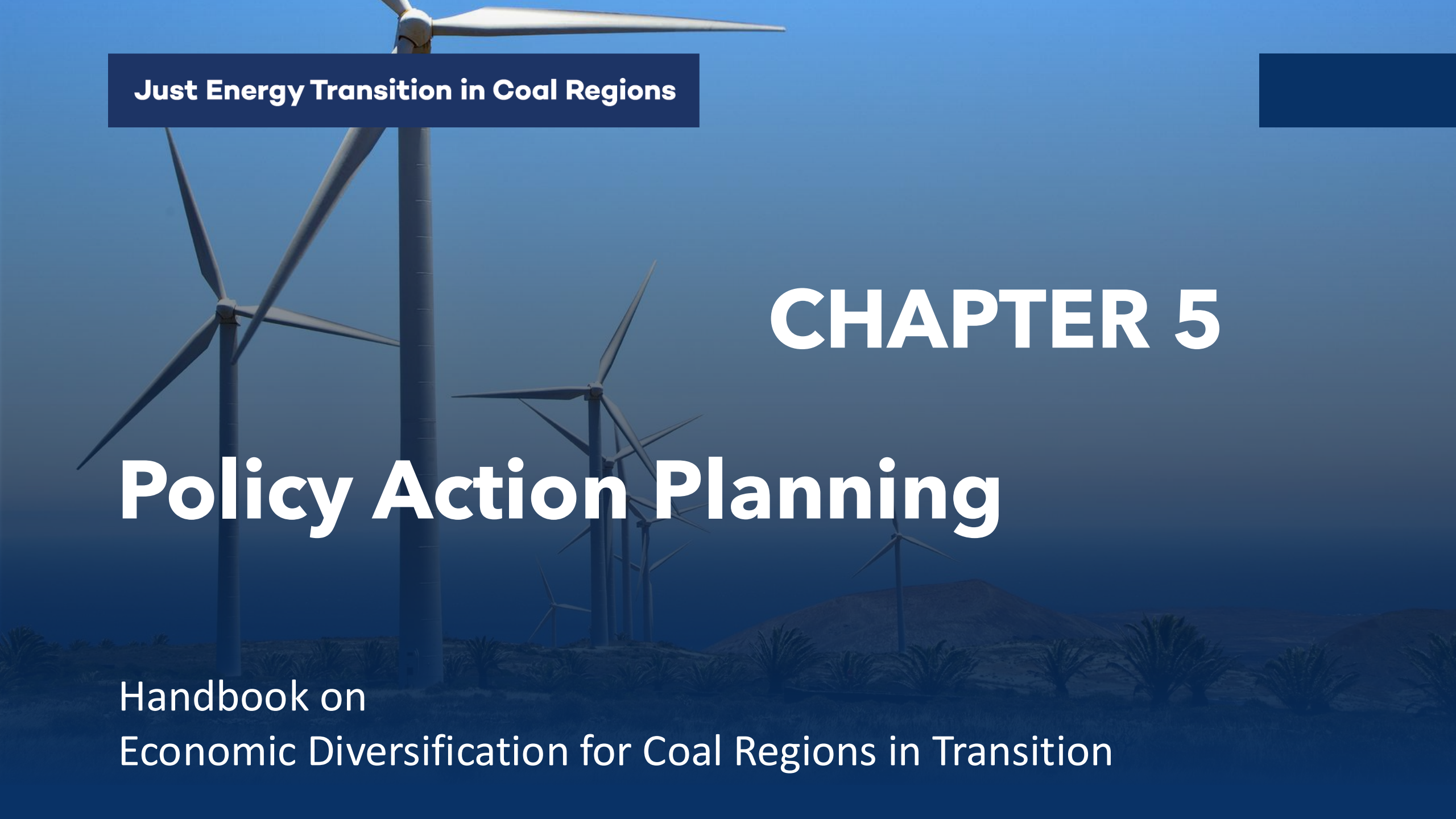
DIVE (UNIDO tool)

ATLAS OF COMPLEXITY (HKS tool)



For more information on the methodology of each tool and case studies, refer to **Section 4.2.**





Just Energy Transition in Coal Regions

CHAPTER 5

Policy Action Planning

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

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1.2 Economic diversification as a key element to prepare for a Just Transition
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3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

6. Developing a Monitoring and Evaluation (M&E) framework

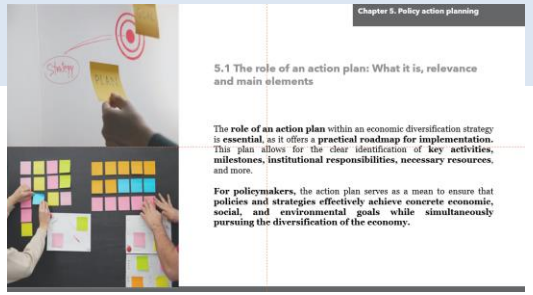
6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

Key messages

The role of an action plan: What it is, relevance and main elements

- **An action plan is an operational document** usually valid for shorter periods of time (1-2 years) that **offers clear guidance on the implementation process to support diversification**.
- It **fosters accountability** among the various stakeholders involved in the implementation phase, **takes into account resource limitations and allocations**, **communicates achievements** or the need for adaptations, and **encourages inter-institutional coordination and collaboration** throughout the process.
- **Essential elements** of an effective action plan include the **purpose, key activities, expected impact, base line and target indicators,, institutional responsibilities, budget, and timelines,** among others.

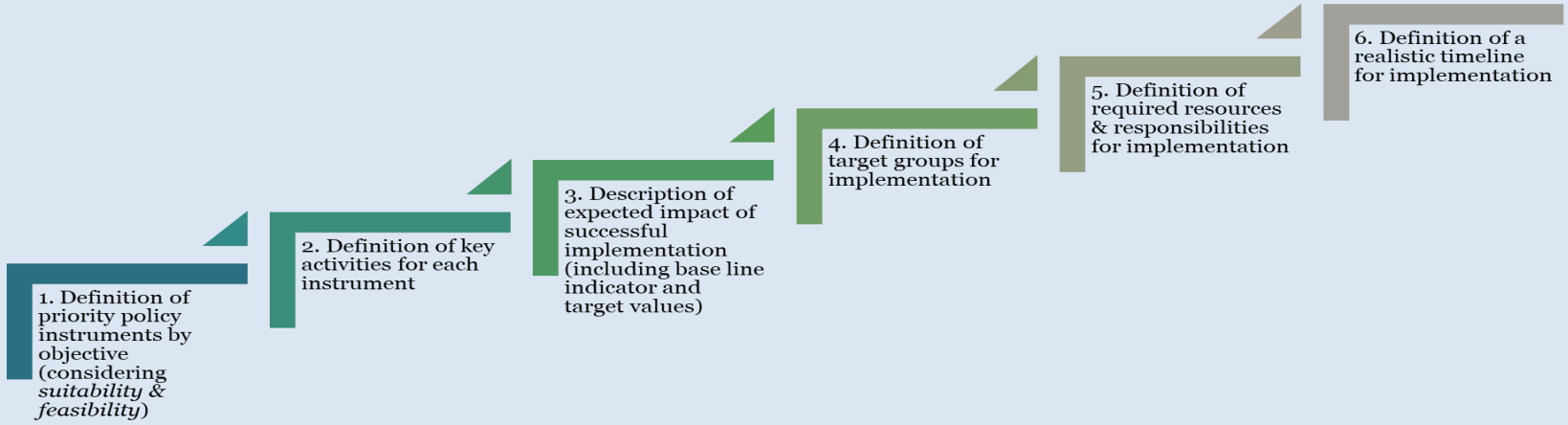
For more information on the role, purpose and elements of an action plan, refer to **Section 5.1.**



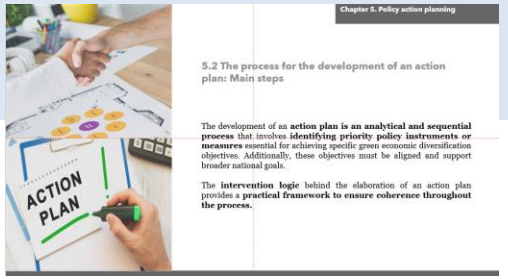
Key messages

The process for the development of an action plan: Main steps

- It involves **establishing a goal-oriented intervention logic** that enables the **definition and prioritisation of specific policy instruments** aimed at **achieving the objectives of green economic diversification**. At the same time, this intervention logic ensures that **these objectives are aligned with national goals**.
- **Following the prioritisation of instruments, several steps** must be undertaken to create an effective action plan.



For further details on the process of developing an action plan, refer to **Section 5.2**



Key messages

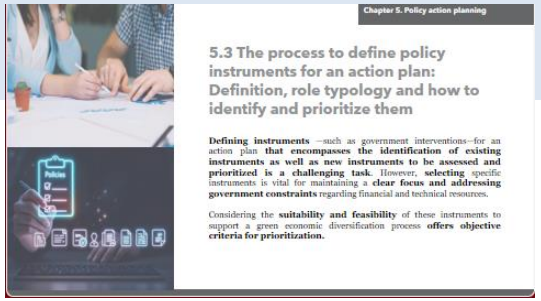
The process to define policy instruments for an action plan: Definition, role, typology and how to identify & prioritize them

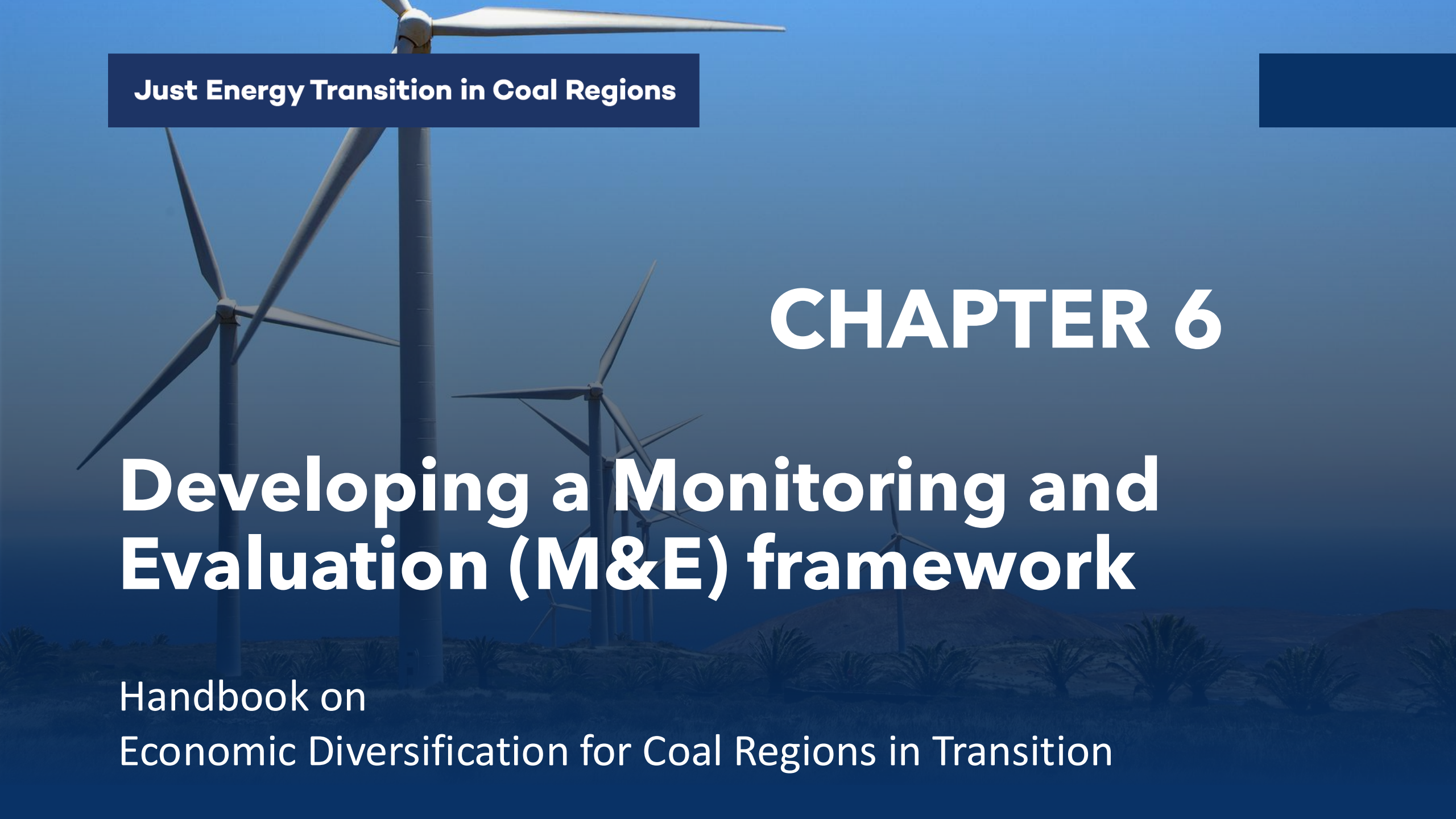
- **Instruments are specific government interventions** designed to influence the behaviour of economic actors and facilitate the achievement of strategic objectives. They can be classified into **four distinct types:**

Regulations	(Dis)incentives	Information	Public goods & services
			
Formulated rules and directives that mandate economic participants to act in accordance with what is ordered in those rules or directives	The handing out or taking away of material resources to encourage certain behaviours by economic actor	The collection, dissemination and publication of information to promote economic activities	Direct public supply of or demand for goods and services, incl. through state-owned enterprises

Prioritising instruments can be challenging due to the temptation to address everything simultaneously; however, **effective prioritisation is crucial for achieving desired outcomes.** The **process of prioritising instruments** starts by creating an **inventory and identifying new instruments** that can support the objectives of green economic diversification. This prioritisation exercise could **involve two primary criteria: suitability and feasibility**.

For more information on the process of defining instruments for an action plan, refer to **Section 5.3.**





Just Energy Transition in Coal Regions

CHAPTER 6

Developing a Monitoring and Evaluation (M&E) framework

Handbook on
Economic Diversification for Coal Regions in Transition

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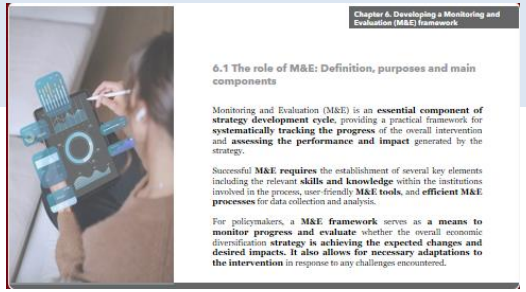
Key messages

The role of M&E: Definitions, purposes and main components

- Monitoring and Evaluation (M&E) is an essential component of strategy design cycle, providing a practical framework for systematically tracking the progress of the overall strategy and concrete policy instruments, as well as assessing the performance and impact generated by the intervention.
- The primary purposes of M&E are to support informed decision-making, foster accountability and legitimacy among the public and partners, and preserve institutional memory.
  - ✓ **Monitoring.** Focuses on ensuring that a policy instrument is implemented correctly,
  - ✓ **Evaluation.** Assesses whether the strategy is utilising the appropriate policy instrument to achieve the desired impact.
- An effective **M&E system** comprises **three main components**: the application of specific skills and knowledge from the institution leading the process, the use of appropriate M&E tools, and the establishment of various processes within line ministries and other institutions responsible for implementing the strategy.

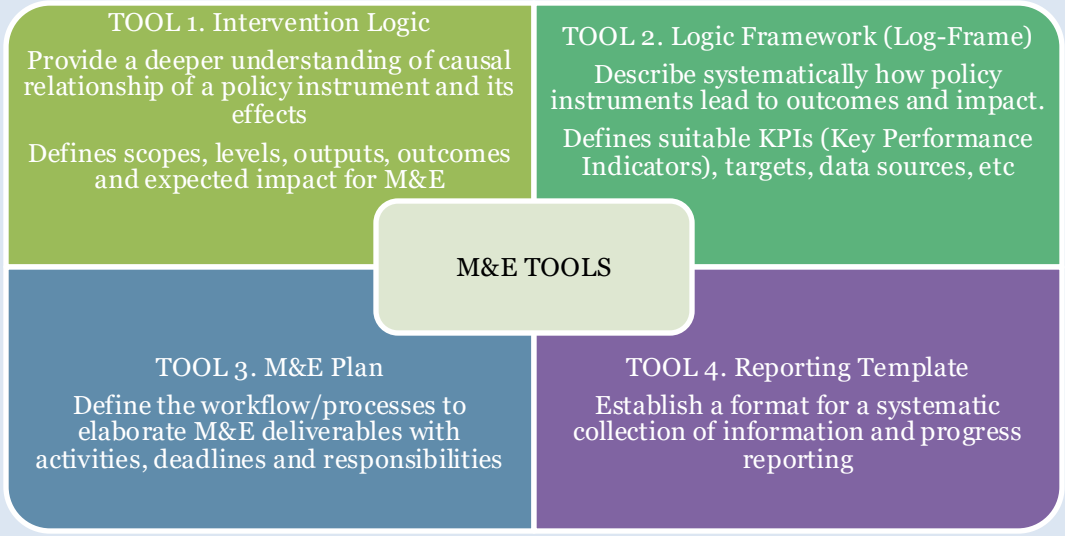
For more information on the definitions, purposes, key differences, and essential components of M&E, please refer to **Section 6.1.**



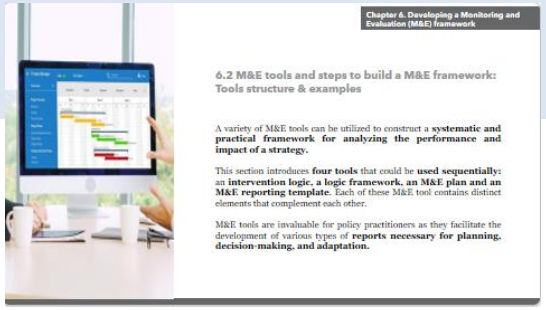
Key messages

M&E tools and steps to build a M&E framework: Tools structure & examples

- A range of M&E tools can be employed to establish a systematic and practical framework for analysing the performance and impact of a strategy. Four distinct yet complementary tools can be utilised in the M&E process. Tools 2, 3 and 4 support the operationalisation of the intervention logic.



For more detailed information on the M&E tools, guidance on developing an M&E framework, and specifics on impact evaluation as a key purpose of an M&E framework, please refer to Section 6.2.



Key messages

Choosing indicators and target-setting for M&E: What is an indicator and alternative scenarios for target-setting

- Choosing the **right indicators** and **setting appropriate targets** are essential components of an M&E process. **Appropriate indicators** ensure that measurements are directly aligned with the outcomes and outputs of the intervention, providing relevant data that accurately reflects progress. **Setting targets** establishes clear, quantifiable expectations for what the intervention aims to achieve, facilitating better planning and execution. The role of target setting can be summarised as:

Targets define "***where we want to go and how fast***"

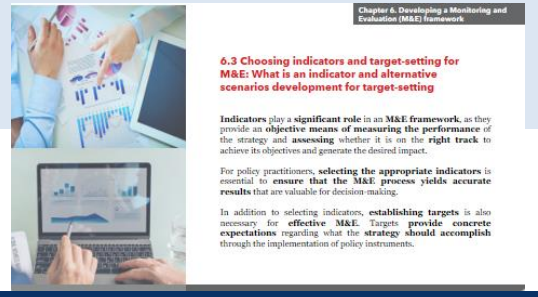
They allow us to **track progress**

Monitoring targets continuously over time provides an "**early warning system**"

This allows the **dynamic adaptation** of policy planning and implementation

- To support this process, scenario analysis can be particularly beneficial, as it offers projections for various potential future development paths, such as business-as-usual, best-case, and worst-case scenarios.

For further information on selecting indicators and target-setting for effective M&E, please refer to Section 6.3.



Acknowledgements

Just Energy Transition in Coal Regions

The project "Innovation Regions for a Just Energy Transition" is co-financed by the International Climate Initiative (IKI) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK) and by the Directorate-General for International Partnerships (DG INTPA) of the European Commission (DG INTPA) for the Interregional Platform for Just Energy Transition in Coal Regions (JET-CR).

Supported by:

Federal Ministry for Economic Affairs and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

Co-funded by the European Union

on the basis of a decision by the German Bundestag

Just Energy Transition in Coal Regions

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More information can be found at:

https://www.international-climate-initiative.com/en/aboutiki/values-responsibility/independent-complaint-mechanism/

Just Energy Transition in Coal Regions

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Handbook on Economic Diversification for Coal Regions in Transition

An evidence-based and participatory approach

The Federal Government

IKI INTERNATIONAL CLIMATE INITIATIVE

Co-funded by the European Union

GPI GLOBAL POLICY INCUBATOR empowering transformation.

The purpose of the handbook

Countries worldwide are **increasingly adopting Just Transition processes to phase out coal – and many more are preparing for these processes.** While these efforts contribute to climate action, it is crucial to address the social and economic challenges and minimise the negative effects faced by affected communities. **To effectively prepare for Just Transition processes**, **countries and regions need to reduce their dependence on coal continuously and to diversify their economies** towards sectors and activities that deliver economic prosperity, social well-being, and environmental sustainability. **The start of the implementation of such an economic diversification strategy even before coal phase out started can prepare a region for this process** and ease the social and political challenges.

This handbook **serves as a practical guide for policy practitioners to develop strategies for economic diversification**. The **first chapter covers conceptual considerations** about Just Transition and the importance of developing economic diversification strategies to prepare for Just Transition and coal phase out, as well as the principles of evidence-based and participatory processes in strategy design. Chapter II-VI **focus on methodologies, tools and processes** for elaborating a thorough diagnosis of the current state of economic diversification, establishing key objectives for economic diversification, identifying economic diversification opportunities and creating an action plan, along with a monitoring and evaluation framework to assess impact.

This **structured approach aims to provide step-by-step guidance for effectively developing economic diversification strategies** that promote a sustainable and inclusive transition.

The content of the handbook

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How to work with the handbook – for different users (I)

a. **Policy makers working at the level of strategic planning: conceptional orientation**

   For those **working at the strategic level**, the **Handbook on Economic Diversification for Coal Regions in Transition** provides a concise overview of the conceptual foundations of Just Transition and economic diversification, along with theoretical guidance on the processes required to design an economic diversification strategy that supports countries and regions throughout the transition.

b. **Policy practitioners at a technical/operative level**

   In addition, the handbook is **designed to assist policy practitioners at a technical/operative level** by offering a step-by-step practical guide to developing an economic diversification strategy. It presents specific methodologies, tools, approaches, and case studies to conduct analysis and enable an evidence-based and participatory process.

How to work with the handbook – for different users (II)

To meet the needs of different audiences, the handbook is available in two versions:

a. **A summary version for policy practitioners at the strategic level,** which compiles key messages from each chapter.

b. A complete, **detailed version for policy practitioners at the technical level**, providing practical guidance to design an effective economic diversification strategy.

How to read the handbook

The summary version for policy practitioners at the strategic level

- Key messages from each chapter are presented in slides with blue format
- Introductory slides for each section are presented in grey format

The complete and detailed version for policy practitioners at the technical level

- Key messages from each chapter are presented in slides with blue format
- Introductory slides for each section are presented in grey format
- Detailed content about each section are presented in slides with red format

The detailed version can be found after the summary version.

Who supported the elaboration of the handbook

The Innovation Regions for a Just Energy Transition (IKI JET) project is jointly funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) under the International Climate Initiative (IKI) and by the European Commission's Directorate-General for International Partnerships (DG INTPA) for the Just Energy Transition in Coal Regions Interregional Platform (JET-CR). The project duration is from December 2022- January 2027 and is implemented by a consortium of six organisations led by GIZ as Joint Project Coordinator and with the Climate Action Network (CAN), International Institute for Sustainable Development (IISD), International Labour Organisation (ILO), and Wuppertal Institute für Klima, Umwelt, Energie GmbH as implementing partners.

IKI JET and its JET-CR Platform aim to support and accelerate just energy transitions away from coal to renewable energies and other sustainable economic activities in Colombia, Chile, South Africa, Indonesia, Vietnam, Thailand, and Mongolia.

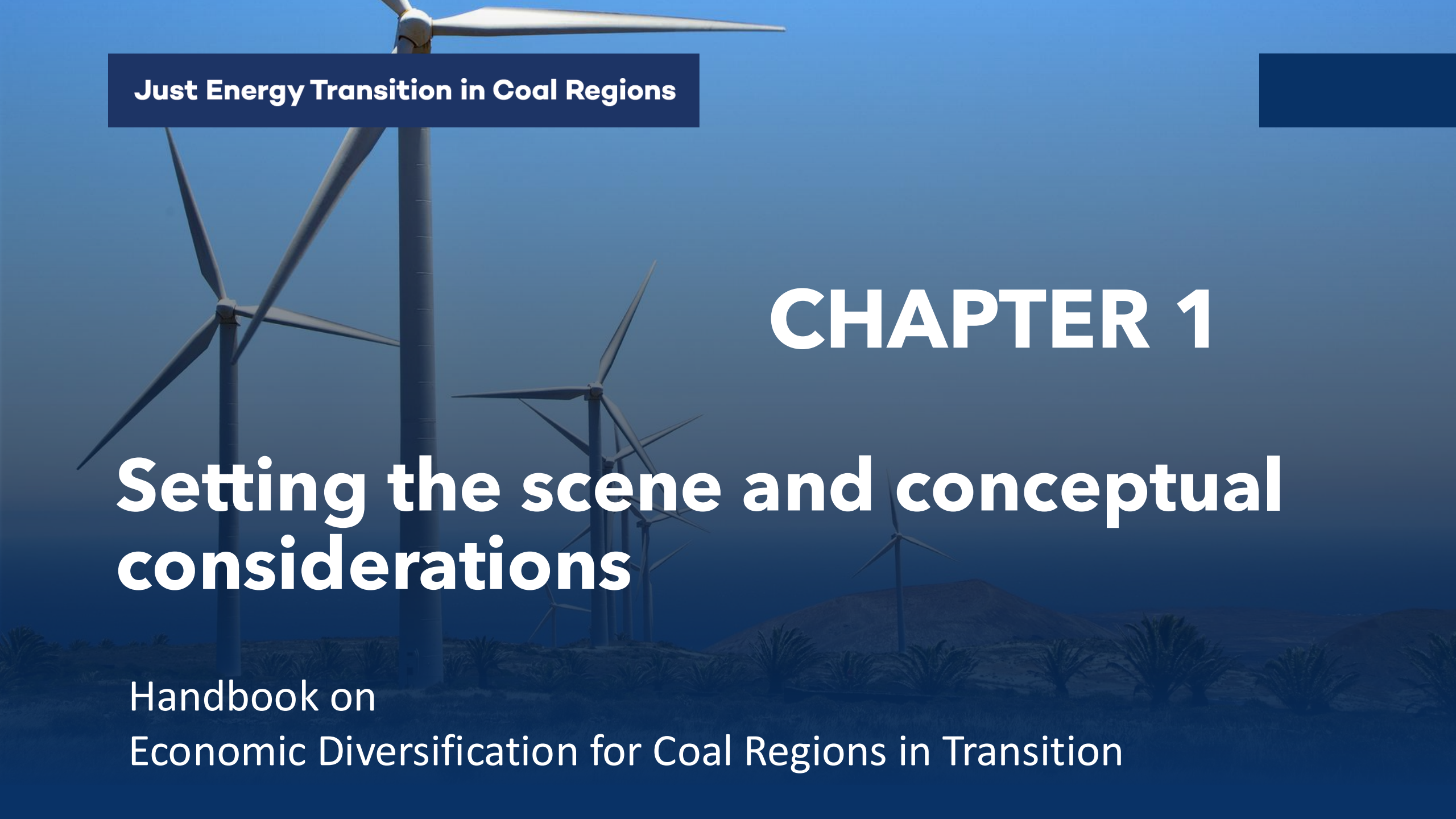
For more detailed information about the IKI JET project, go to
https://www.international-climate-initiative.com/PROJECT1843-1

Who is behind the handbook?

One of the key activities of the IKI JET project is to support stakeholders in coal regions to implement just transition from coal to green economy. One of the key tools that we provide for actors in the partner regions is the development of a Handbook on Economic Diversification for Coal Regions in Transition. The handbook aims to guide practitioners in designing evidence-based and participatory strategies that foster commitment and ownership of the transition process.

The handbook was prepared by the Global Policy Incubator (GPI) within the framework of the IKI JET project and under the guidance of GIZ. GPI is a German organisation specialised in supporting policy and strategy formulation through participatory, evidence-based, and capacity-building approaches, with particular expertise in advancing socio-ecological transformation.

For more detailed information about GPI, go to:
https://www.gpi-policy.com/



Just Energy Transition in Coal Regions

CHAPTER 1

Setting the scene and conceptual considerations

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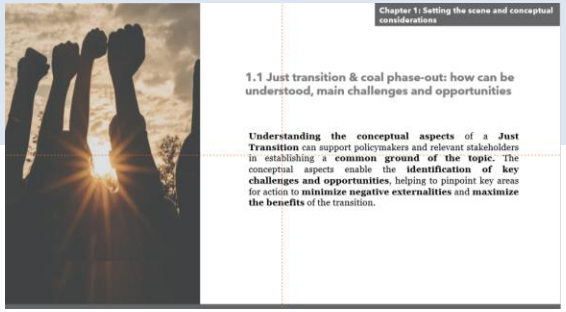
Key messages

Just Transition & coal phase-out: how can it be understood, main challenges and opportunities

- The **climate crisis** is compelling economies to adopt increasingly **ambitious commitments** to accelerate the **shift away from fossil fuels toward energy systems based on renewable sources.** In response, **countries are implementing Just Transition processes** that **maximise the social and economic opportunities of climate action** while effectively managing its challenges to **ensure that no one is left behind.**

- **Key challenges associated with a Just Transition** include decarbonisation and sectoral transformation of the economy, energy security, investment and financing, long-term engagement from strategic actors, and the need for robust planning and participatory processes. At the same time, **this transition offers significant opportunities** such as diversifying and local economies, retraining and upskilling workers, developing communities and infrastructure, improving access to finance and green investment, and strengthening the resilience and empowerment of local communities.

For more information about conceptual aspects, challenges and opportunities of Just Transition, refer to **Section 1.1.**



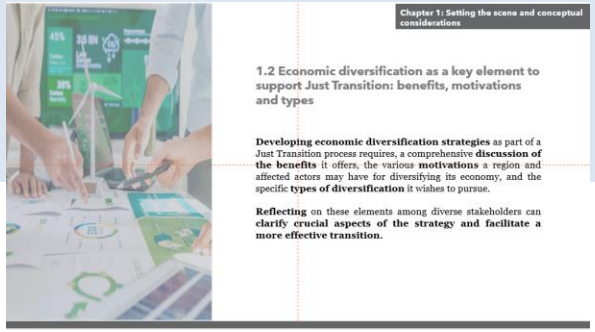
Key messages

Regional economic diversification as a key element to support Just Transition: benefits, motivations and types

- **Economic diversification is a key element to support and prepare for a Just Transition**, to reduce the dependence on a carbon-based sector, such as coal and related industries and prepare for a transformation to a carbon-free economy. It also enhances resilience to external shocks; fosters skills development, innovation and entrepreneurship; strengthens social development and inclusion and helps close economic and social gaps.

- **Depending on the regional context and priorities**, economic diversification may have different **motivations** (related to socio-economic or environmental aspects (or both) and pursue different **types** (intra-sectoral and/or intersectoral).

For more information about benefits, motivations and types of economic diversification, refer to **Section 1.2.**

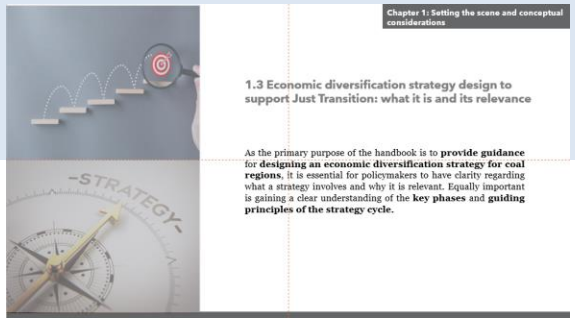


Key messages

Economic diversification strategy design to support Just Transition: what it is and its relevance

- **An economic diversification strategy** is a structured document designed **to guide regional decisions and choices to plan its transition process effectively** and ensure that all the actors from the economy (industries, workers, investors, communities) are secure and can get benefits.
- **Designing an economic diversification strategy involves a series of phases** that together create a robust framework for effective implementation: a) diagnostic of the current state of economic diversification, b) defining objectives of economic diversification, c) identifying diversification opportunities, d) defining an action plan for diversification, and e) monitoring and evaluation of actions.
- In addition**, strategy design must be guided by key principles** such as **a) evidence-based analysis,** and **b) good governance** (including multi-level collaboration within government and active participation of key stakeholders).

For more information about strategy design, phases and principles, refer to **Section 1.3.**



Key messages

Evidence based approach for strategy design: use of quantitative and qualitative information

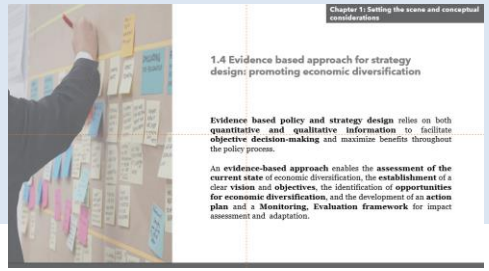
- **An evidence-based approach** is a **fundamental principle** for **effective strategy design.** It relies on **robust data, analysis, and information to understand the regional situation — ensuring decisions are well-informed and context-specific**. In the case of economic diversification**, evidence-based strategies integrate both quantitative and qualitative tools** to assess current situation, identify constraints, set clear objectives, and identify diversification opportunities.

- Moreover, this approach remains **essential throughout the strategy cycle** as **baseline indicators enable effective monitoring and evaluation,** helping to track progress, adjust interventions, and measure the impact of policy actions over time.

- This **Handbook focuses more** on the following **quantitative tools** to support strategy design.

Improving the Quality of Industrial Policies EQuIP (GIZ-UNIDO)	**Diversifying Industries & Value Chains for Exports** DIVE (UNIDO)
Sectoral Assessment and Prioritisation SAP (GPI)	**Atlas of Complexity** (HKS)

For more information about evidence-based approach for strategy design and quantitative methods and the required resources for their application, refer to **Section 1.4.**

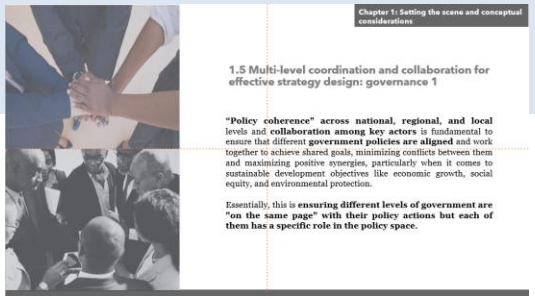


Key messages

Multi-level coordination and collaboration for effective strategy design: governance 1

- **Multi-level coordination among government institutions is a core principle of effective strategy design. It ensures policy coherence across national, regional, and local levels, enabling different government policies are aligned and work together to achieve shared goals.**
- However, achieving **effective multi-level coordination and vertical policy coherence can be challenging**. Common **obstacles** include **political fragmentation, institutional capacities constraints, geographical fragmentation, and limited intergovernmental collaboration**.

  For more information about multi-level coordination among government institutions including challenges and mechanisms to address them, refer to **Section 1.5.**



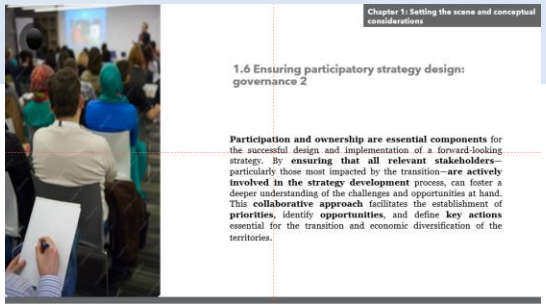
Key messages

Ensuring participatory strategy design: governance 2

- **The active participation of key stakeholders is a fundamental principle in strategy design**. It enables a deeper understanding of the specific **challenges and opportunities faced by those most affected by the transition**. This collaborative approach helps to **define priorities and objectives, identify viable opportunities, and shape key actions** that are essential for a successful Just Transition and the economic diversification of territories.

- **In the context of economic diversification strategy design, key stakeholders include** government institutions at all levels, private sector representatives, academic and research institutions, civil society organisations and NGOs, local communities, trade unions and worker organisations, women, youth, and other marginalised groups, as well as donors and development cooperation agencies.

For more information about strategy design, phases and principles, refer to **Section 1.6.**



Content of Chapter 1

1.1 **Just Transition in Coal Regions**: how can it be understood, main challenges and opportunities

1.2 **Economic diversification as a key element to support Just Transition**: benefits, motivations and types

1.3 **Economic diversification strategy design to support Just Transition**: what it is and its relevance

1.4 **Evidence based approach for strategy design:** use of quantitative and qualitative information

1.5 **Multi-level coordination and collaboration for effective strategy design:** governance 1

1.6 **Ensuring participatory strategy design**: governance 2

1.1 Just transition in coal regions: how can it be understood, main challenges and opportunities

Understanding the conceptual aspects of a **Just Transition in coal regions** can support policymakers and relevant stakeholders in establishing a **common ground of the topic.** The conceptual aspects enable the **identification of key challenges and opportunities**, helping to pinpoint key areas for action to **minimise negative effects** and **maximise the benefits** of the transition.

Why are countries and regions aiming for a Just Transition and phasing out coal?

Climate action and energy security are a global challenge. The urgent need to **reduce greenhouse gas (GHG) emissions and curb environmental pollution** has driven countries to adopt increasingly **ambitious commitments to reduce emissions.** This can only be achieved through the transition from carbon intense energy systems to renewable energy and through the decarbonisation of industry.

To align with the agreement **to limit global warming to well below 2°C by the end of the 21st century, and pursue efforts to keep warming within the safer limit of 1.5°C**, the Paris Agreement sets clear targets: global GHG emissions must be **reduced by 43% by 2030 and 60% by 2035**, relative to 2019 levels, with the ultimate objective of **achieving net-zero carbon dioxide emissions by 2050** (UN Climate Action).

This global imperative requires countries and regions with **energy systems heavily reliant on coal** to **design and implement** comprehensive **decarbonisation strategies**, progressively **phasing out coal and transitioning towards renewable energy** sources.

What is Just Transition?

Beyond developing decarbonisation strategies and plans that include the closure of coal mines and coal-fired power plants, according to the Paris Declaration, countries and regions that aim to phase-out coal must ensure that the **transition to renewable energy and other economic sectors** follows the **principles of a Just Transition**. According to the International Labour Organisation (ILO), a Just Transition involves "**maximising the social and economic opportunities of climate action, while minimising and carefully managing challenges, including effective social dialogue among all affected groups and respect for fundamental principles and labour rights".**

Therefore, a Just Transition:

- Recognises that **environmental, social, and economic** dimensions are interconnected and must be addressed in a **holistic and integrated manner**.
- Seeks to implement **energy and climate policies** in ways that not only drive decarbonisation but also support **economic development and secure future employment** opportunities for those **affected** by the transition.
- Integrates all those **people that are affected by the transition** in the process of designing it and thus making it **inclusive**
- Must ensure that the **international climate** goal of limiting global warming to 1.5°C is achieved.
- Aims to create a **sustainable, just, and inclusive** economy, ensuring that **no one is left behind.**

➡ For an overview about some of the Just Transition concepts go to: Just Transition Toolbox for coal regions

Why to support coal regions in the framework of Just Transition

Coal regions are at the heart of the **Just Transition** because they are among the most affected by the global shift away from fossil fuels. These **regions often depend heavily on coal** for jobs, income, and local revenues, **making them particularly vulnerable to economic decline, social disruption, and job losses** as the world moves toward cleaner energy.

Supporting coal regions ensures that **workers and communities are not left behind but** instead are provided with **new opportunities through economic diversification, reskilling, and social protection.** In this way, the transition becomes fair, inclusive, and sustainable for everyone.

Just transition challenges in coal regions:

Economic and social aspects

1. High economic and social consequences. Given the dependence of many coal producing regions on the coal sector, the closure of coal mines and coal-fired power plants can have significant economic consequences (loss of income sources and state revenue) and social consequences (impacts on workers and affected communities through unemployment and poverty).

2. Strong productive specialisation. Coal-dependent regions tend to be highly specialised/concentrated in "mono-industrial" areas, where the development of other productive activities and capacities has not been strongly encouraged in the past.

3. Limited energy security. A key challenge in the transition to renewable energy is ensuring a diversified energy matrix that reduces dependency and vulnerability, while securing a reliable national supply.

4. High investment and financing. Achieving carbon neutrality by 2050 requires heavy investment and financing infrastructure, technology and capacity building, which is a major challenge for a coal region

Just transition challenges in coal regions:

Governance aspects

5. Long-term commitment of strategic actors. The involvement of various levels of government — national, regional, and local — as well as various groups of actors such as from the private sector like local businesses and chambers / associations, social partners like trade unions, and civil society, is essential for successfully achieving the transition process. However, ensuring not only their participation but also their sustained, long-term commitment has proven to be challenging.

6. Adequate planning and participatory process. Timely planning and active participation from various stakeholders are essential for incorporating diverse perspectives and developing effective strategies to mitigate adverse effects on affected individuals and communities. However, engaging everyone in the decision-making process before the transition occurs can often be challenging.

Just Transition strategies and opportunities in coal regions

The Just Transition process, while imposing challenges also opens opportunities to improve the economic and social situation of the region.

1. Diversification of the local economy

1.1 Economic/productive diversification towards sectors and value chains that create more jobs, generate income, be higher value-adding, less polluting and more inclusive, help to reduce the vulnerability auf regions, and create innovation and regional economic growth.

1.2 Energy transition and diversification towards the development of renewable energies (e.g. solar, wind) that can enable the region to become a *hub* for clean energy production. Additionally, it provides the opportunity to invest in energy storage solutions and technologies (batteries, green hydrogen) that can support the stability and security of the energy system and create new industrial opportunities.

2. Retraining and skills development

2.1 Upskilling and reskilling programmes can help workers transition to jobs in growth industries (e.g. construction, energy efficiency, renewable energy), limiting the potential unemployment that transition can create and alleviating the social impacts of the transition.

2.2 Workforce mobility and support programmes can help workers relocate to areas with emerging industries, which can provide opportunities for economic growth and job creation in those areas.

Just transition strategies and opportunities in coal regions

The Just Transition process, while imposing challenges also opens opportunities to improve the economic and social situation of the region.

3. Community and infrastructure development. With proper planning, clarity and commitment, Just Transition can encourage the development or improvement of local public infrastructure and public services.

4. Access to green finance and investment. Coal regions can access climate change funds or support just transition processes that facilitate the region's economic and energy conversion, infrastructure development and job creation. In addition, it can encourage the development of public-private partnerships to invest in sustainable infrastructure and technologies.

5. Resilience and empowerment of local communities. Involving communities in the decision-making process and creating programmes tailored to their specific needs can lead to more sustainable and equitable outcomes. Just Transition can increase resilience to the effects of climate change by enabling communities to move away from dependence on fossil fuels and adopt more sustainable and locally controlled energy systems and even own some of the renewable energy utilities through cooperatives.

A Toolbox to guide Just Transition processes in coal regions

The toolbox provides an overview of:

- **Concepts of Just Transition**
- The **role of developing strategies** for Just Transition
- **Ways** to designing **effective governance models**
- **Challenges and opportunities for decarbonising** energy-intensive industries
- **Skilling and reskilling** (as part of an economic diversification process).

The main distinction between the Toolbox and this Handbook on Economic Diversification for Coal Regions in Transition is that, while the Toolbox focuses primarily on conceptual considerations and elements related to Just Transition as a broader topic, the handbook concentrates specifically on how to design an economic diversification strategy and it provides quantitative methodologies to assess the current state of economic diversification in a region and to identify potential opportunities for diversification.

The toolbox was developed by Wuppertal Institut für Klima, Umwelt, Energie GmbH with the financial support of the European Union's Partnership Instrument and the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMU) in the context of the International Climate Initiative (IKI)

To access the toolbox go to: Just Transition Toolbox for coal regions

1.2 Economic diversification as a key element to support Just Transition: benefits, motivations and types

Economic diversification as part of a Just Transition process requires a comprehensive **discussion of the benefits** it offers, the various **motivations** a region and affected actors may have for diversifying its economy, and the specific **types of diversification** it wishes to pursue.

Reflecting on these elements among diverse stakeholders can **clarify crucial aspects of the strategy and facilitate a more effective transition.**

Economic diversification benefits

Economic diversification to support and prepare for a Just Transition of a coal region:

1. **reduces risk and dependence on a single sector and improves adaptation to external shocks**, considering that a diversified economy relies on several sectors and each one has the capacity to respond differently (i.e. some will be able to adjust better and faster).
2. **fosters skills development, innovation and entrepreneurship** by creating opportunities for new activities, industries, products, and markets that can generate sustainable economic growth.
3. **strengthens social development and inclusion and reduces gaps** by generating new quality employment opportunities and increasing social equity and resilience to shocks. An example of this can be seen in Quang Ninh, a region in Vietnam that has actively pursued a multi-sector strategy to reduce reliance on coal while creating quality job.

➢ Therefore, economic diversification decreases vulnerability, increases the resilience of economies to external shocks by maintaining stability, economic growth and welfare.

- For a deeper discussion about the importance of economic diversification for creating quality jobs in new industrial sectors, go to Just Transition Toolbox for coal regions
- To also consider some positive effects of economic concentration but the risk it possess, go to Economic Diversification in coal+ regions. Toolkit

Economic diversification can have different motivations and types

Regions can decide among these diversification motivations and types.

As part of a Just Transition process that could involve the closure of coal mining and/or the replacement of coal-fired power plants, regions may need to:

1. **diversify** based on **different motivations** geared by priorities: socio-economic, environmental or the combination of these two
2. conduct an **energy diversification** and/or **economic diversification** (intra-sectoral and/or cross sectoral change).

1. Diversification Strategies (Motivations)

Socio-economic diversification strategy:

- Focus on sectors that generate alternative income, economic benefits and sources of employment -also to prepare for coal phase-out

Green diversification strategy:

- Focusing on sectors more aligned to decarbonisation and climate change mitigation goals

Socio-economic and green diversification strategy:

- Focus on more environmentally sustainable, socially inclusive and income generating sectors

2. Types of Diversification (Based on Structural Change)

Energy diversification - Technological change:

- e.g. from the **use of coal to the use of green hydrogen within the same activity** in one sector (rolled steel production).

Economic diversification - Intra-sectoral change:

- e.g. from one **activity to a less polluting activity within the same industry** (e.g. from cement processing to develop cement blocks).

Economic diversification - Cross-sectoral change

- e.g. From **coal mining to new industries** or services (less polluting)

Case Study: Just Transition and diversification in the region of Lausitz - Germany

Dual transition. The Lausitz once has been one of the country's main coal producing areas. After the breakdown of the communist East German Economy, coal production already had enormously declined. In recent years, due to Germany's efforts to reduce carbon emissions and adopt a cleaner energy model, **the German government in consensus of all affected groups** has initiated a **transition process to close coal mines and plants and replace them with renewable energy sources.**

Regional diversification strategies (proposed but not yet achieved)

Renewable Energies	• **Investment in renewable energy projects** (solar and wind) that have provided sources of employment and clean energy. • **Investment in green hydrogen production** to be a production centre for Europe
Industry and Technology	• **Industrial transformation** by driving digitalisation and technological innovation (incl. the development of research centres and companies in emerging sectors such as artificial intelligence and robotics). • **Green reindustrialisation** through the attraction of technology companies and startups developing green technologies
Education and Training	• **Job retraining** through training programmes for mining workers, giving them skills for employment in sectors such as renewable energy, technology and construction.
Sustainable Tourism	• **Ecotourism and industrial heritage development** through the transformation of coal mines into tourist sites

Expected results

Substitute employment | Environmental sustainability | Economic growth

A Toolkit on economic diversification in coal+ regions

The toolkit offers two blocks of information. The first one gives an overview of topics related to economic diversification for coal+ regions such as:

- **Key aspects** about economic diversification
- **Framework conditions** for the success or failure of economic diversification
- **Baseline diagnostics** mentioning methodologies to conduct the analysis
- **Strategy design** including tools for defining policy objectives and sectoral priorities
- **Policy instruments** classifying them in vertical and horizontal and by type
- **Monitoring and Evaluation** specifying tools and practices
- **Key emerging sectors** highlighting sectors attractive for a coal region to diversify

The second block presents an in-depth report that follows the same structure but offers a more detailed look into each section, including an overview about different land use cases for post-coal areas with further resources, links, examples, and case studies.

To access the toolbox go to: Economic diversificatioln in coal+ regions toolkit

The **main distinction between the Toolkit and this Handbook** on Economic Diversification for Coal Regions in Transition is that the **Toolkit provides an overview of more conceptual aspects and links to methodologies and tools** that can support the elaboration of a strategy. The **Handbook mainly concentrates on how to design an economic diversification strategy showing the process step by step** and also **presents in detail quantitative methodologies** to assess the current state of economic diversification in a region and to identify potential opportunities for diversification (**including case studies**).

The toolbox was developed by the European Commission**.**

1.3 Economic diversification strategy design to support Just Transition: what it is and its relevance

As the primary purpose of the handbook is to **provide guidance** for **designing an economic diversification strategy for coal regions**, it is essential for policymakers to have clarity regarding what a strategy involves and why it is relevant. Equally important is gaining a clear understanding of the **key phases** and **guiding principles of the strategy cycle.**

What is an economic diversification strategy for coal regions and why do they need one?

An **economic diversification strategy** is a structured document designed to **guide regional choices and decisions** to **plan its transition process effectively** and **ensure that all the actors from the economy** (industries, workers, investors, communities) **are secure and can get benefits.**

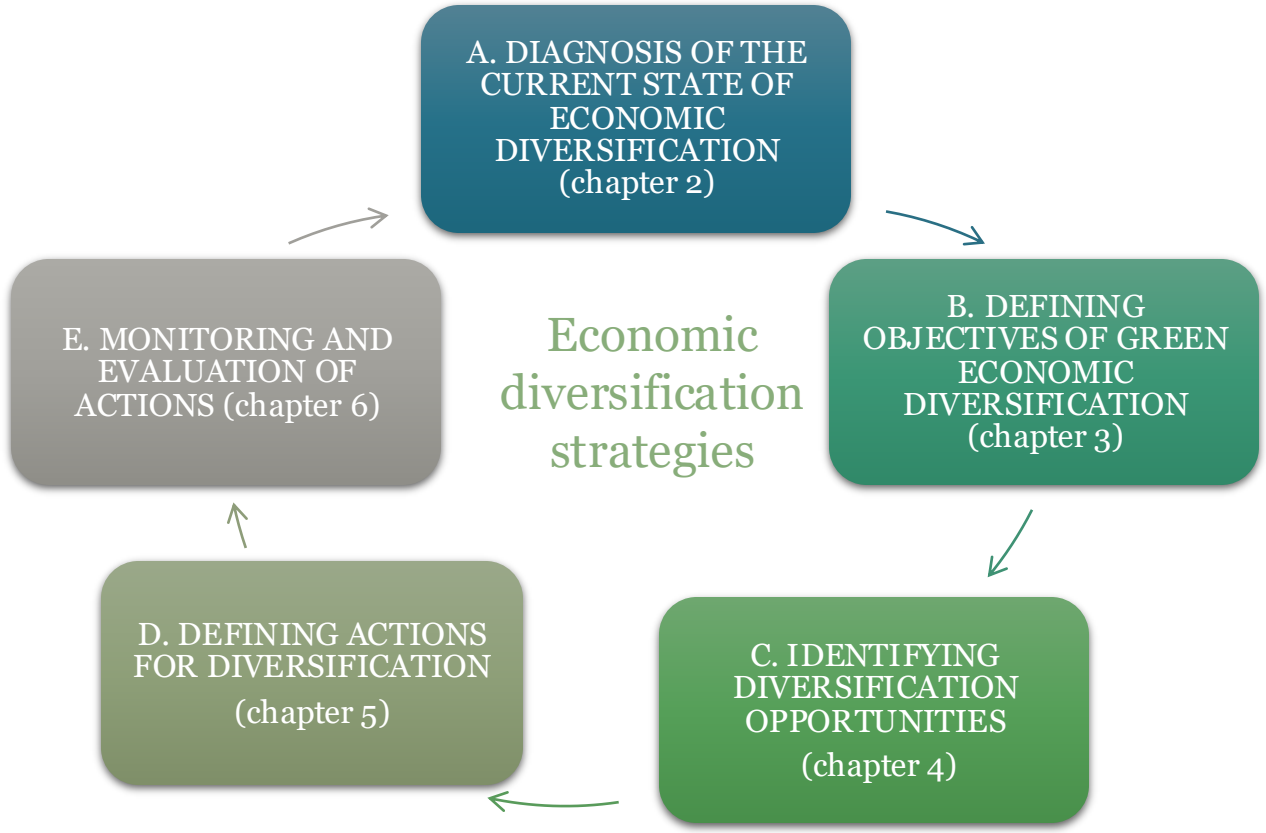
The strategy should clearly **define the objectives of economic diversification while aligning with national development goals and global commitments.** Its overarching aim is to broaden the region's economic base by developing new industries, sectors, products, or income sources beyond those it currently depends on. **In coal regions**, this means moving away from reliance on coal mining and coal-based industries towards a more resilient and sustainable economic model.

Designing an economic diversification strategy involves a series of phases that together create a robust framework for effective implementation. These phases are introduced on the following slide and explained in detail in the subsequent chapters.

In addition, the **strategy design must be guided by key principles** such as 1) **evidence-based analysis**, using both qualitative and quantitative methods to assess the current state of economic diversification and to identify new opportunities; and 2) **good governance**, promoting multi-level collaboration within government institutions and the active participation of key stakeholders, especially those marginalised groups from decision-making (e.g. women and youth). These guiding principles will be presented in more detail in Sections 1.4, 1.5 and 1.6 of this chapter.

Cycle to design economic diversification strategies for coal regions

Key phases



Key principles

EVIDENCE-BASED PROCESS RELIES ON QUANTITATIVE AND QUALITATIVE INFORMATION

EFFECTIVE GOVERNANCE PROCESS INVOLVES MULTI-LEVEL COLLABORATION AND PARTICIPATION OF KEY ACTORS

Each phase of the cycle is presented in detail in the following chapters of the handbook

1.4 Evidence-based approach for strategy design: use of quantitative and qualitative information

Evidence-based policy and strategy design involves **quantitative and qualitative information** to facilitate **objective decision-making** and maximise benefits throughout the policy process.

An **evidence-based approach** enables the **assessment of the current state** of economic diversification, the **establishment** of a clear **vision** and **objectives**, the identification of **opportunities for economic diversification**, and the development of an **action plan** and a **Monitoring, Evaluation framework** for impact assessment and adaptation.

The role of evidence-based strategies in economic diversification

An evidence-based approach is a fundamental **principle in strategy design** and is especially critical for guiding transformative processes like economic diversification in coal-dependent regions. It ensures that **strategies are grounded in objective data and real-world insights**, enabling a clear **understanding of the specific challenges, opportunities, and goals these transitioning regions face**. Evidence-based strategies draw on **both quantitative and qualitative tools** to deliver:

- A clear **understanding** of the **current state of economic diversification or concentration within the region**, along with the primary challenges and opportunities identified by key stakeholders.
- **Strategic direction** regarding the **diversification vision and objectives that the region aims to pursue**, including the motivations and types of diversification that will contribute to the Just Transition process.
- Insight into the **economic diversification opportunities available in the region** to leverage the Just Transition process effectively.
- **Guidance on policy actions that can be implemented to support economic diversification**, offering clarity and planning security for key stakeholders, including public institutions, industries, investors, workers, and communities.
- Guidance for **implementing a Monitoring and Evaluation framework** to conduct mid-term assessments of policy actions, adapt those actions as needed, and carry out an impact evaluation at the conclusion of the intervention

An evidence-based process enhances strategy effectiveness

Benefits of evidence-based strategies

Quantitative tools to support the development of an evidence-based economic diversification strategy

Tools	General topics covered	Chapter of the Handbook where the tool is applied
Improving the Quality of Industrial Policies EQuIP (GIZ-UNIDO)	•Production and export structure at a country / regional level •Employment generation and emissions concentration at a regional level •Identification of *benchmarks and role models* •Product and market diversification index at country level	Chapter 2
Diversifying Industries & Value Chains for Exports DIVE (UNIDO)	•Current degree of diversification of the export basket at a regional level •Current degree of sophistication & vulnerability of the export basket at a regional level and by product •Past ability to diversify at a regional level (past track record) •Identification of new diversification opportunities at regional level	Chapter 2 & Chapter 4
Sectoral Assessment and Prioritisation SAP (GPI)	•Sectoral performance at regional level considering economic, social and environmental variables •Identification of existing opportunities for economic diversification at a regional level	Chapter 4
Atlas of Complexity (HKS)	•Export structure and complexity •Countries product space •Identification of economic diversification opportunities at country level	Chapter 4

A detailed explanation of the different tools is specified in the following chapters.

Resources required for the implementation of quantitative tools

Tools / Resources	1. Sectoral Assessment and Prioritisation (SAP)-GPI tool	2. Diversifying Industries & Value Chains for Exports (DIVE)-UNIDO tool	3. Atlas of Economic Complexity HKS tool
1. Expertise	– Large databases management – Professional background in economics and intermediate skills to create indicators in excel	– Large databases management – Professional background in economics and strong econometrics skills	– Professional background in economics – Internet navigation skills to access the automatised platform on the website
2. Time	2 weeks for calculations, graphs and a brief analysis (without data collection)	3-4 weeks for calculations, graphs and a brief analysis (without data collection)	2-3 days for a brief analysis (everything is already systematised, including graphs)

Qualitative tools to support the development of an evidence-based economic diversification strategy

Tools	General topics covered	Chapter of the Handbook where the tool is applied
Workshops	• Defines objectives of economic diversification as part of a Just Transition process	Chapter 3
Participatory Appraisal of Competitive Advantage PACA (GIZ)	• secondary literature review, • intermediate participatory processes (i.e. workshops) to pre-define strategic sectors • primary information collection through interviews and mini-workshops to learn more about the local economy and sectors • final participatory process (i.e. workshop) to prepare a diagnostic of the local economy and develop short and medium-term projects relevant to the identified economic sub-sectors.	Chapter 4
University of Indonesia methodology	• secondary literature review (desk research) • primary information collection through interviews to specify the goods and services that supported regions should consider in their diversification strategies • participatory processes through focus groups discussions	Chapter 4

These tools are only mentioned in the following chapters as the focus of the handbook is on quantitative tools.

1.5 Multi-level coordination and collaboration for effective strategy design: governance 1

“Policy coherence" across national, regional, and local levels and **collaboration among key actors** is fundamental to ensure that different **government policies are aligned** and work together to achieve shared goals, minimising conflicts between them and maximising positive synergies, particularly when it comes to sustainable development objectives like economic growth, social equity, and environmental protection.

Essentially, this is **ensuring different levels of government are "on the same page" with their policy actions but each of them has a specific role in the policy space.**

Key level of governmental / policy actors for the design of economic diversification strategies

Vertical Policy Coherence

(ensuring that decisions made at one level support and don't contradict policies at other levels)

National level:

- Key governance actors: Ministry of Economy, Environment, Energy, Mining and Labour
- 1) Elaborate national policies and strategies to guide the just socio-ecological transition process of the country, 2)formulate support and incentive structures for regional economic transformation, 3) create a framework for energy transition, 4) formulate social policies that cushion the transformation.

Regional level:

- Key governance actors: Regional government
- Interacts with the national government to 1) elaborate the regional economic diversification strategies according to the productive and export capacities of the territory and align them to the national policy framework, 2) access resources to finance the Just Transition process and economic diversification, and 3) adjust regulations according to the regional context. Depending on the level of decentralisation the regional government can have its own resources to finance the transition process.

Local level:

- Key governance actors: Municipalities and community councils
- Interacts with the national and regional government to 1) elaborate the local economic diversification strategies according to the productive and export capacities of the territory and align them to the regional and national policy framework, 2) access resources to finance the Just Transition process and economic diversification, and 3) adjust regulations according to the local context. Depending on internal agreements at a country level mining royalties can flow to the local or regional level.

Multi-level Coordination & Collaboration

For information about multi-level and multi-actor governance and an effective governance model go to: Just Transition Toolbox for coal regions

Challenges and mechanisms for policy coherence and collaboration among different levels of government

Challenges

- **Limited intergovernmental coordination:** Poor communication and collaboration between different government levels and departments can lead to conflicting policies.
- **Political fragmentation:** Different political priorities at different levels can hinder policy alignment.
- **Capacity constraints:** Limited resources and expertise at local levels can impede effective implementation of coherent policies.
- **Geographical fragmentation:** Coal mining regions are not necessarily identical with administrative regional boundaries which makes vertical policy integration even more difficult.

Mechanisms

- **Intergovernmental coordination mechanisms:** Establishing meetings, forums, task forces, interinstitutional committees for regular dialogue and collaboration between different levels of government.
- **Policy evaluation and monitoring:** Regularly assessing the impacts of policies and identifying areas for improvement across levels.
- **Capacity building:** Providing training and support to local governments to strengthen their ability to implement coherent policies
- **Horizontal institutions alignment**: Ensuring inter-municipal synergies among the institutions that represents those functional regions (case study for Improving inter-municipal cooperation)

For more in-depth information about challenges and mechanisms for policy coherence see Chapter 2 of OECD (2023), Driving Policy Coherence for Sustainable Development: Accelerating Progress on the SDGs, OECD Publishing, Paris, https://doi.org/10.1787/a6cb4aa1-en.

Case study: Vertical governance in Chile to support Just Transition and economic diversification

Effective collaboration across all levels of government has been key to Chile's just socio-ecological transition. In 2023, Chile created the Interministerial Committee for a Just Socio-Ecological Transition to coordinate policies, identify challenges, propose solutions, and guide actions with a territorial perspective.

The **Interministerial Committee for a Just Socio-Ecological Transition** is permanently composed by the Ministries of Environment, Economy, Energy, Labor, Health, and Social Development, with additional collaboration from ministries such as Interior, Mining, Women and Gender Equality, and Education. All these Ministries have representation at a national and regional level.

The committee is led by the Ministry of Environment responsible for designing and implementing policies and actions under the **National Strategy for a Just Socio-Ecological Transition**. The Ministry also chairs the Tripartite National Council that engages civil society, the private sector, and public institutions.

This governance model strengthens intersectoral cooperation, facilitates monitoring of initiatives like transition plans in Tocopilla and Mejillones, and helps build consensus to create sustainable policies and regulations over time.

See the following slide to access information about the policy framework at a national, regional and local level supporting the process of a **Just Socio-Ecological Transition in Chile with an integral approach.**

Case study: Policy framework to support Just Transition in Chile

National

Nationally Determined Contribution (2020), Ministry of Environment	Long-term climate strategy to 2050 (2021), Ministry of Environment	Framework Law for Climate Change (2022), Ministry of the Environment	National Energy Policy (2022), Ministry of Energy	Long-Term Energy Planning 2023-2027, Ministry of Energy	Decarbonisation Plan (2024), Ministry of Energy	National Strategy for Green Hydrogen, Ministry of Energy	National Strategy for Just Socio-ecological Transition (2024), Ministry of Environment

Regional

Regional Action Plans for Climate Change in Antofagasta (2024-2029), Ministry of the Environment	Regional Energy Plans (PER), Ministry of Energy	Antofagasta Government Plan 2021-2024, Regional Government	Regional Development Strategy (2009-2020) (to be updated) Regional Government	Regional Innovation Strategy (2022-2028) Regional Government

Local

Community Regulatory Plan, Municipality of Mejillones	Community Development Plan (PLADECO) (2023-2033)	Just Transition Plan for Mejillones (in process)	Plan for the Environmental and Social Recovery of Mejillones (PRAS) (2024, in process)

1.6 Ensuring participatory strategy design: governance 2

Participation and ownership are essential components for the successful design and implementation of a forward-looking strategy. By **ensuring that all relevant stakeholders** — particularly those most impacted by the transition — **are actively involved in the strategy development** process, can foster a deeper understanding of the challenges and opportunities at hand. This **collaborative approach** facilitates the establishment of **priorities**, identify **opportunities**, and define **key actions** essential for the transition and economic diversification of the territories.

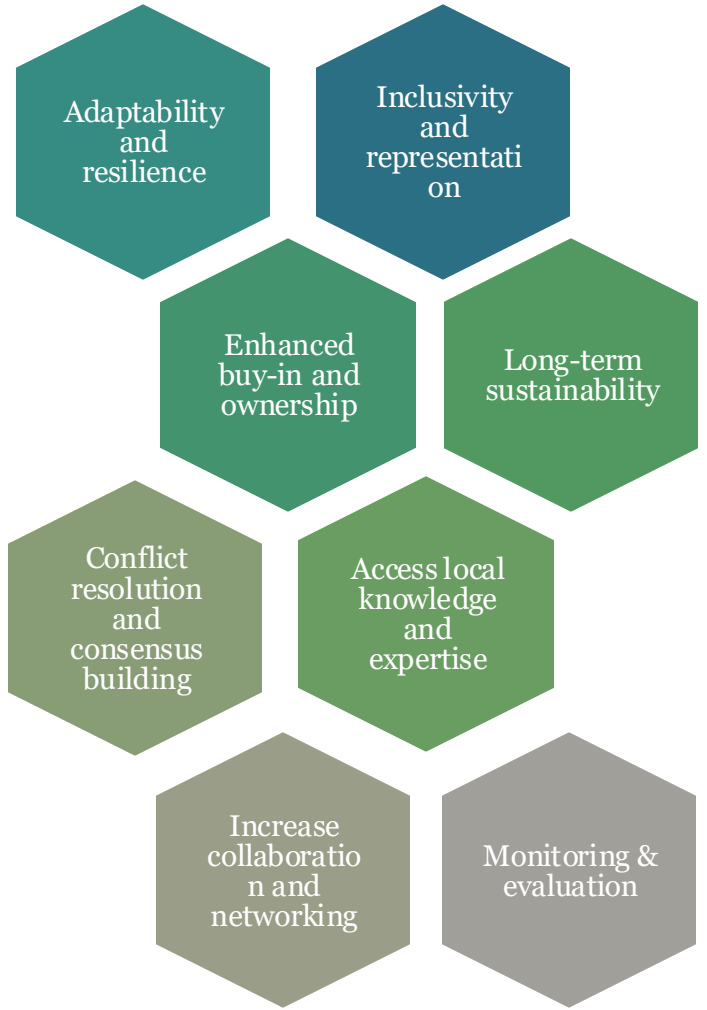
Benefits of participatory processes for strategy design

Participation involves the **active engagement of various stakeholders in decision-making** processes that impact their lives and communities.

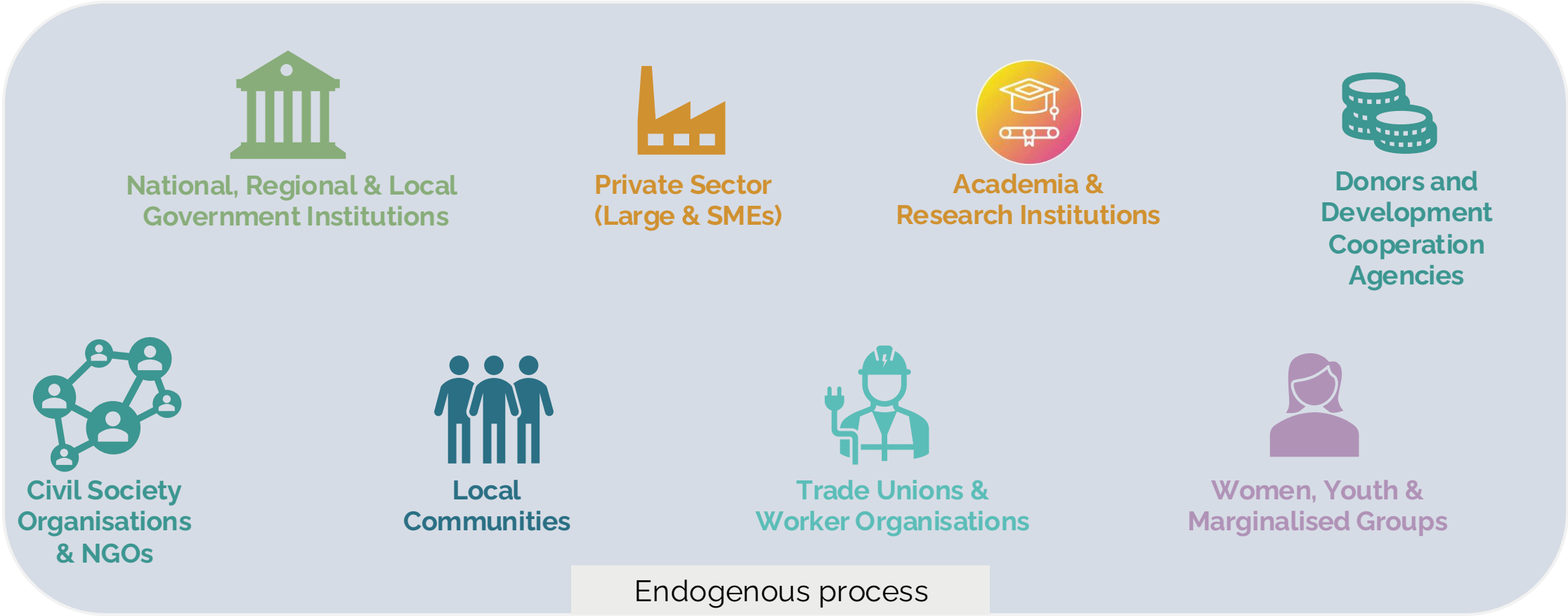
This approach **fosters the inclusion of diverse voices and perspectives**, creating a rich dialogue among different actors, especially those who have historically been excluded from shaping strategic decisions.

According to the United Nations Human Development Report (2016), **societies that encourage the active participation of diverse stakeholders experience enhanced social cohesion and more equitable development.**

Some of the **benefits of participatory processes** are listed in the figure.



Key stakeholders to be involved in participatory processes to develop economic diversification strategies



Stakeholder participation throughout the design process ensures transparency, inclusiveness, cooperation and effective implementation.

How to effectively involve key stakeholders in participatory processes

Several strategies could be considered to enhance stakeholder engagement:

1. Identify **relevant stakeholders** from the public and private sector, civil society, academia
2. Establish **clear objectives** of the participatory process
3. Create an **inclusive environment** including accessible locations, providing materials in multiple languages
4. Use a **variety of engagement methods** such as workshops, surveys, focus groups, public forums, and online platforms to gather inputs
5. Facilitate **open dialogue** and foster and atmosphere of trust
6. **Provide information** and **training** to stakeholders to make informed contributions
7. **Encourage collaboration** and co-creation
8. Gather and **incorporate stakeholder feedback** in the decision-making process and communicate how their contributions influence outcomes

For information about tools and guidance on participation formats go to: Just Transition Toolbox for coal regions

Case study: Just Socio-Ecological Transition Plan (TSEJ) of Tocopilla, Chile: A Plan built from the Community (2022)

The **Plan of Tocopilla** is a comprehensive planning instrument that outlines short, medium, and long-term actions. It was developed with a participatory approach with local, regional, and national stakeholders, including representatives from the private sector, academia, and civil society. This Plan accompanies the transition process associated with the closure or reconversion of coal-fired power plants in the municipality. The process included several actions:

- **Development of interviews with various sectors of the society to elaborate a diagnosis of the territory**, including the establishment of thematic tables in key areas such as environment, sustainable local development, health, and human capital and employment. As a result, several lines of action were prioritised, emphasising productive diversification, fostering entrepreneurship, promoting a circular economy, enforcing green business practices, and supporting labour reintegration programs. Additionally, initiatives in clean energy, electromobility, and socio-environmental recovery were highlighted, along with improvements in health, education, and civic participation.
- **Development of a Public Assembly** that gathered community members to inform and define the next steps.
- **Design of the Plan of Tocopilla with four levels of participation** including the Thematic Committee (citizen), Regional Committee (regional technical-advisory), Advisory Committee (central technical-advisory), and the Interministerial Committee (political-strategic). These bodies promoted diverse representation, with gender equity and an intergenerational focus, ensuring the inclusion of different perspectives.

Case study: Just Socio-Ecological Transition Plan (TSEJ) of Tocopilla, Chile: A Plan built from the Community (2022)

- **Evaluation of the Local Proposal by the Regional Committee** who incorporated adjustments and forwarded it to the Advisory Committee, a central technical-political body that reviewed and complemented the actions. The Interministerial Committee of TSEJ, composed of key ministries, approved and authorised the execution of the Plan.
- **Development of a Public Assembly for validation,** where the Plan was presented to local authorities and the community, marking the beginning of its implementation and reaffirming the commitment to a Just Socio-Ecological Transition in Tocopilla.

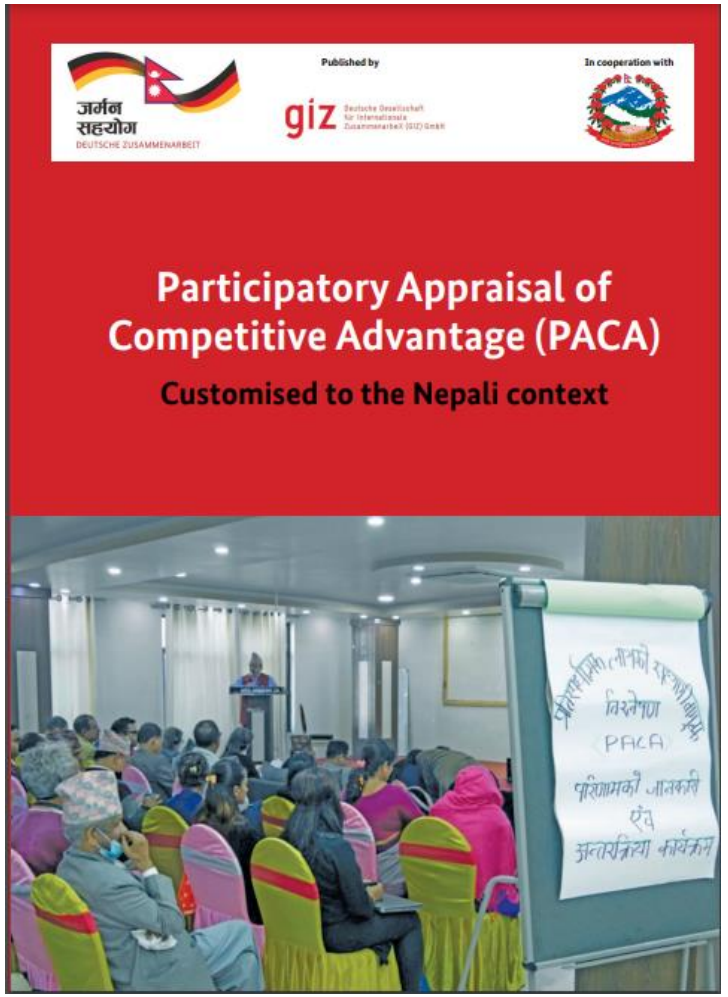
The development of the Just Transition Plan in Tocopilla under a participatory approach is considered a successful case in Chile, generating significant benefits for public governance by promoting transparency, shared responsibility, and ownership in defining public policies. The active inclusion of citizens and key stakeholders in all stages of the process strengthened trust and legitimacy in all decisions made. This ensures that the adopted measures are not only technically feasible but also socially accepted and sustainable in the long term, contributing to more equitable development aligned with the needs and aspirations of the territory.

PACA: supporting the development of participatory processes

Participatory Appraisal of Competitive Advantage (PACA) initially developed by Mesopartner is a "**participatory, bottom-up, pragmatic and market-oriented approach to support sustainable local and regional economic development** (LRED). PACA is **used to diagnose and assess a local economy and its potentials**, and to **plan and formulate activities and projects in a participatory manner** with the purpose of stimulating the local economy and strengthening its resilience".

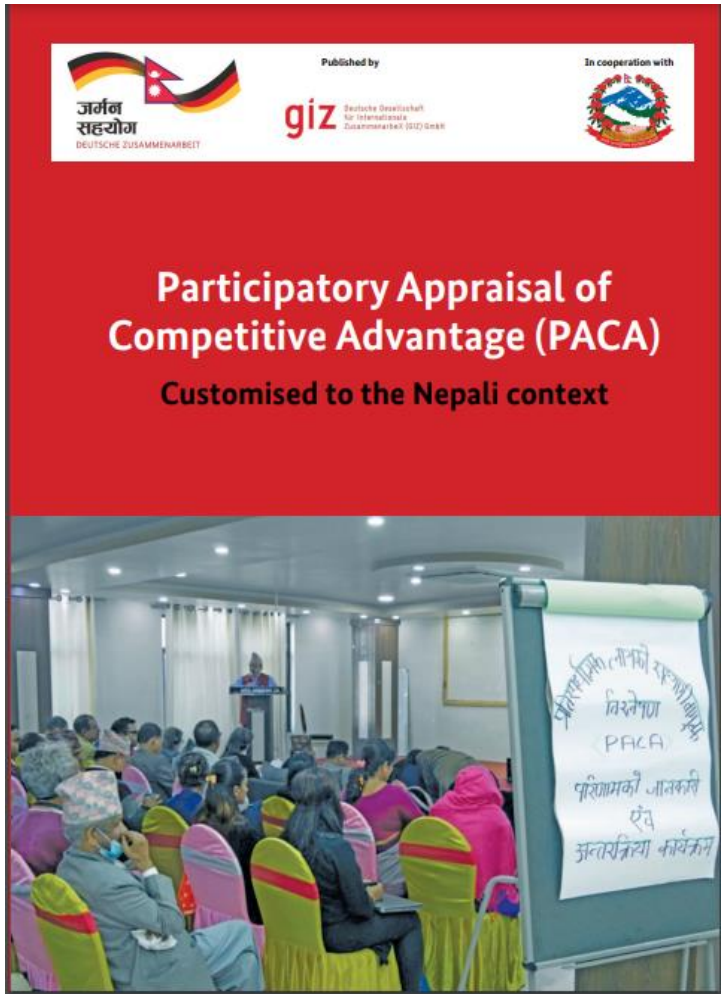
The PACA process can vary depending on the local context and the specific planning requirements of the municipalities, but in general it considers the following phases:

a) **Preparation.** Scanning and summarising secondary literature, statistics, facts and figures about the location
b) **Hypothesis workshop.** Build hypotheses about the local economy and to train the local PACA team on relevant tools, concepts, and techniques required during the entire process (involves small group of key stakeholders)
c) **Kick-off workshop.** Prioritised sub-sectors for local economic development are presented to a larger stakeholder group, validated and/or amended based on the feedback of different stakeholders. Fieldwork planning is developed as part of the workshop.



PACA: supporting the development of participatory processes

d) **Field work.** Interviews and mini-workshops are conducted for the prioritised sub-sectors in specific locations.
e) **Results workshops.** After the fieldwork, the PACA team re-unites to develop proposals for LRED activities.
f) **Presentation event and way forward workshops.** Results are presented to the larger stakeholder group (participants from kick-off workshop and other actors involved in fieldwork). After the presentation event, interested stakeholders are invited for the way forward workshops.



- For a detailed explanation about the PACA tool go to:
  Mesopartner PACA

- For an application of the PACA tool in a country got to:
  PACA customised to the Nepali context

Just Energy Transition in Coal Regions

CHAPTER 2

Elaborating a diversification diagnostic

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

1.1 Just Transition in coal regions
1.2 Economic diversification as a key element to prepare for a Just Transition
1.3 Economic diversification strategy design to support Just Transition
1.4 Evidence-based approach for strategy design
1.5 Multi-level coordination and collaboration for effective strategy design
1.6 Ensuring participatory strategy design

2. Elaborating a diversification diagnostic

2.1 The analytical process to assess the degree of economic diversification in coal regions
2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications
2.3 Quantitative tools to assess the degree of economic diversification in coal regions

3. Defining objectives for economic diversification strategies

3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

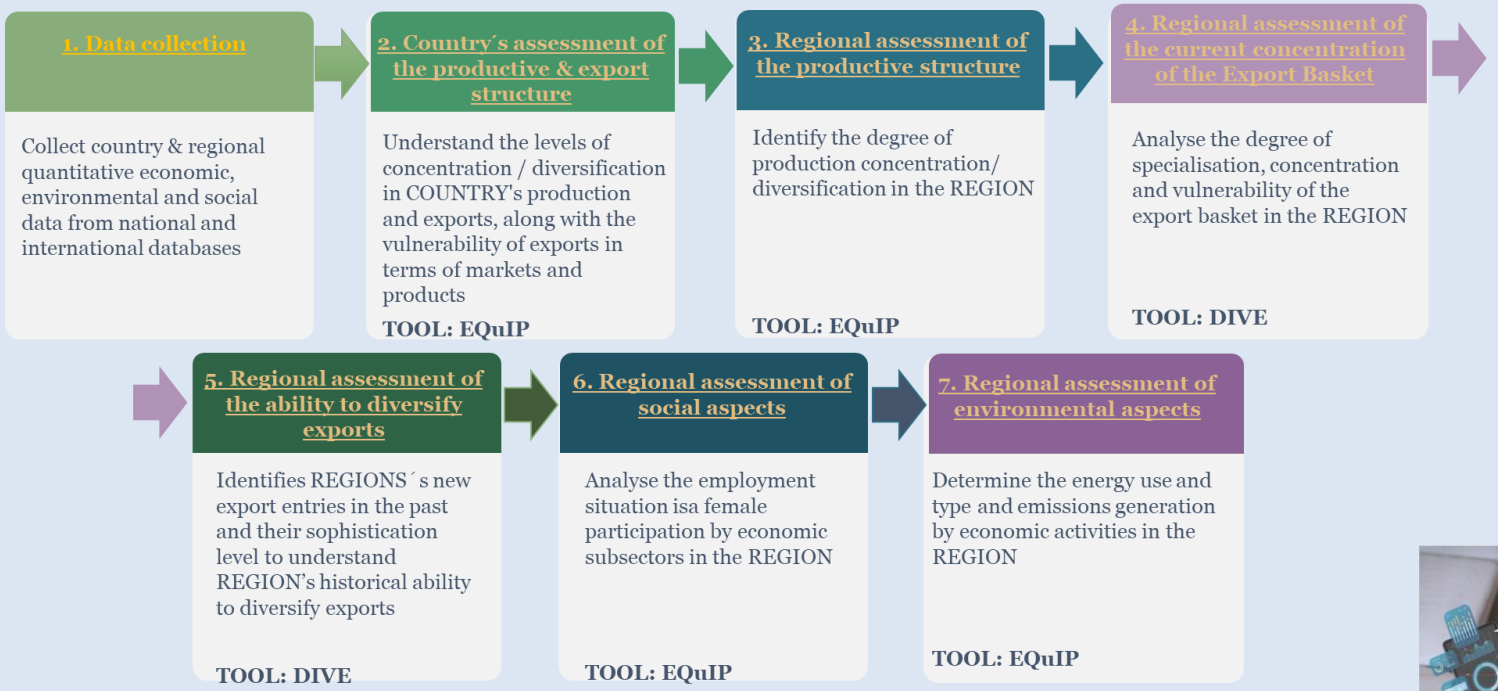
6. Developing a Monitoring and Evaluation (M&E) framework

6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

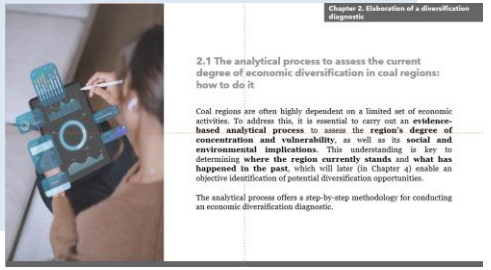
Key messages

The analytical process to assess the current degree of economic diversification in coal regions: how to do it

- Assessing the concentration and vulnerability of coal regions including their social and environmental implications is essential to understand **where the region currently stands** and **what has happened in the past. The Handbook proposes a sequential step-by-step process to conduct the assessment using indicators from EQuIP and DIVE tools.**



For more information about why the sequential steps are useful, refer to **Section 2.1.**



Key messages

Indicators to assess the degree of economic diversification in coal regions and social and environmental implications: examples based on case studies

- Empirical evidence shows that **coal-based regions** typically display a **high concentration of production and exports**. As these regions prepare for the **coal phase-out**, it is **essential to design an evidence-based economic diversification strategy**. This requires **applying a range of indicators not only to measure the degree of concentration in the coal sector**, but also to identify **other sectors that drive the regional economy and could provide future opportunities for diversification**. The assessment further aims to capture the **social and environmental implications of the current economic structure**, thereby providing a stronger foundation for the diversification strategy.

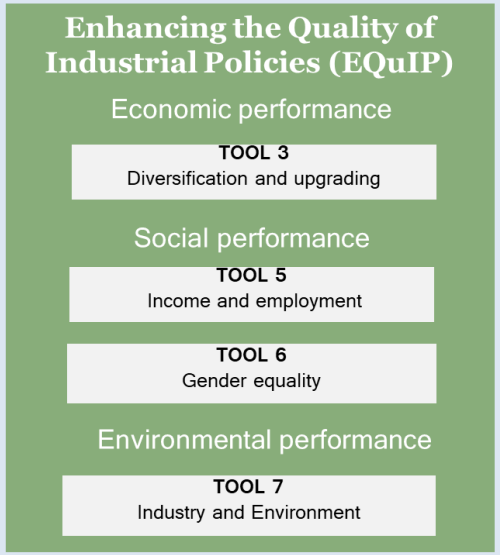
- This chapter of the **handbook introduces a battery of 13 indicator**s proving a **step-by-step guidance** to conduct the analysis

For more information about the indicators, their interpretation and logic, method of calculation, sources, and data required, refer to Section 2.2.

Key messages

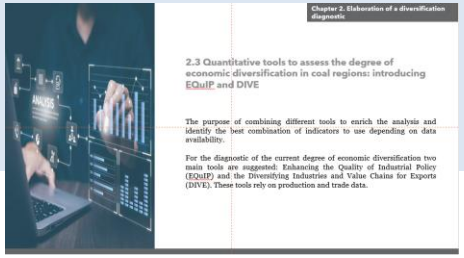
Quantitative tools to assess the degree of economic diversification in coal regions: introducing EQuIP and DIVE

- This handbook introduces two main quantitative tools to assess the degree of economic diversification in coal regions that offer a battery of indicators



UNIDO-GIZ. Supports the formulation of participatory, evidence-based policies and strategies for inclusive and sustainable industrial development.

UNIDO. Supports the design of diversification policies and helps address a key question about the direction an economy should take: Is it desirable to diversify exclusively into new products that rely on the existing set of capabilities and are linked to available resources (related products)? Or is it feasible to develop new specialisations in products that bear little similarity to the country's current productive structure (unrelated products)?



For more information about the tools, refer to Section 2.3.

Content of Chapter 2

2.1. **The analytical process to assess the current degree of economic diversification in coal regions:** how to do it

2.2. **Indicators to assess the degree of economic diversification in coal regions and social and environmental implications:** examples based on a case studies of Antofagasta – Chile and East Kalimantan – Indonesia

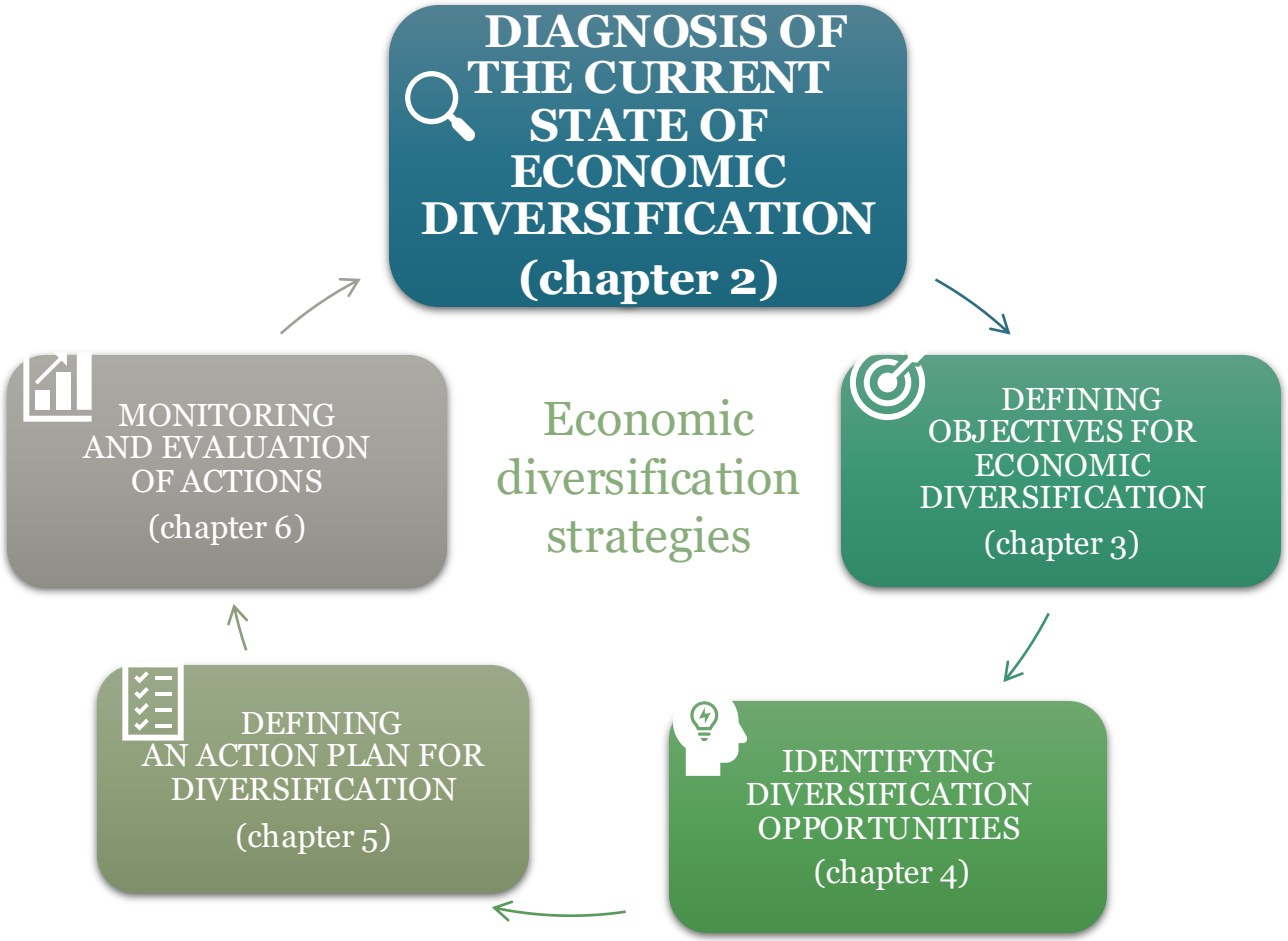
2.3. **Quantitative tools to assess the degree of economic diversification in coal regions:** introducing EQuIP and DIVE

2.1 The analytical process to assess the current degree of economic diversification in coal regions: how to do it

Coal regions typically are highly dependent on a limited set of coal related economic activities. To reduce this dependence, it is essential to carry out an **evidence-based analytical process** to assess the **region's degree of concentration on the coal sector, the situation of other sectors and the region's vulnerability,** as well as its **social and environmental implications**. This understanding is key to determining **where the region currently stands** and **what has happened in the past**, which will later (in Chapter 4) enable an objective identification of potential diversification and transformation opportunities.

The analytical process offers a step-by-step methodology for conducting an economic diversification diagnostic.

Diagnosis of the current state of economic diversification in the strategy design cycle



It is an essential phase of a strategy development cycle as it helps to understand the **degree of economic concentration of a region and the social and environmental implications associated.**

Furthermore, allows to identify which **other sectors or activities are important for the regional economy** where it could diversify.

The importance of assessing quantitatively the current degree of economic diversification for effective strategy design

Calculating the degree of concentration of the regional economy on the coal sector allows to identify the challenge that coal phase out means

Identifying the degree of economic concentration allows to understand the challenges of the region and ensure that the objectives of the economic diversification strategy are coherent to these challenges (chapter 3)

Creating a thorough and objective situation diagnostic for informed decision-making provides guidance to policymakers in crafting interventions to promote economic diversification (chapter 5)

Analysing the current degree of economic concentration allows to create a baseline for monitoring and evaluation purposes (chapter 6)

The next slide presents a **general overview of the sequential steps** that a region can follow to conduct an **economic diversification diagnostic**. Each step highlights the **quantitative tools** (EQuIP or DIVE) that can support the assessment.

- **Section 2.2** explains the indicators used in the tools (EQuIP and DIVE) in detail, with concrete examples from **Antofagasta, Chile** and **East Kalimantan, Indonesia**.

- **Section 2.3** introduces the general analytical tools (**EQuIP and DIVE**).

Sequential steps to develop a diagnostic of the degree of economic diversification

1. Data collection

Collect country & regional quantitative economic, environmental and social data from national and international databases

2. Country´s assessment of the productive & export structure

Understand the levels of concentration / diversification in COUNTRY's production and exports, along with the vulnerability of exports in terms of markets and products

TOOL: EQuIP

3. Regional assessment of the productive structure

Identify the degree of production concentration/ diversification in the REGION

TOOL: EQuIP

4. Regional assessment of the current concentration of the Export Basket

Analyse the degree of specialisation, concentration and vulnerability of the export basket in the REGION

TOOL: DIVE

5. Regional assessment of the ability to diversify exports

Identifies REGIONS´s new export entries in the past and their sophistication level to understand REGION's historical ability to diversify exports

TOOL: DIVE

6. Regional assessment of social aspects

Analyse the employment situation isa female participation by economic subsectors in the REGION

TOOL: EQuIP

7. Regional assessment of environmental aspects

Determine the energy use and type and emissions generation by economic activities in the REGION

TOOL: EQuIP

Please find explanations to each step on the next slide

Why these sequential steps are useful?

Step 1: Quantitative data collection. The first step is to verify the availability of quantitative data and collect the data. This is crucial for defining and adjusting the assessment methodology and determining the appropriate analysis period. Regional information is often limited, making this step fundamental for ensuring a robust diagnostic.

Step 2: Country´s assessment of the productive & export structure. A preliminary evaluation of the country's overall productive and export structure provides context for the regional analysis. Understanding the degree of diversification at the national level helps position the region within the broader economic landscape.

Step 3: Regional assessment of the productive structure. The next step is to analyse the regional productive structure. This includes measuring economic concentration on the coal sector and identifying additional leading subsectors that could be strengthened to support future diversification efforts.

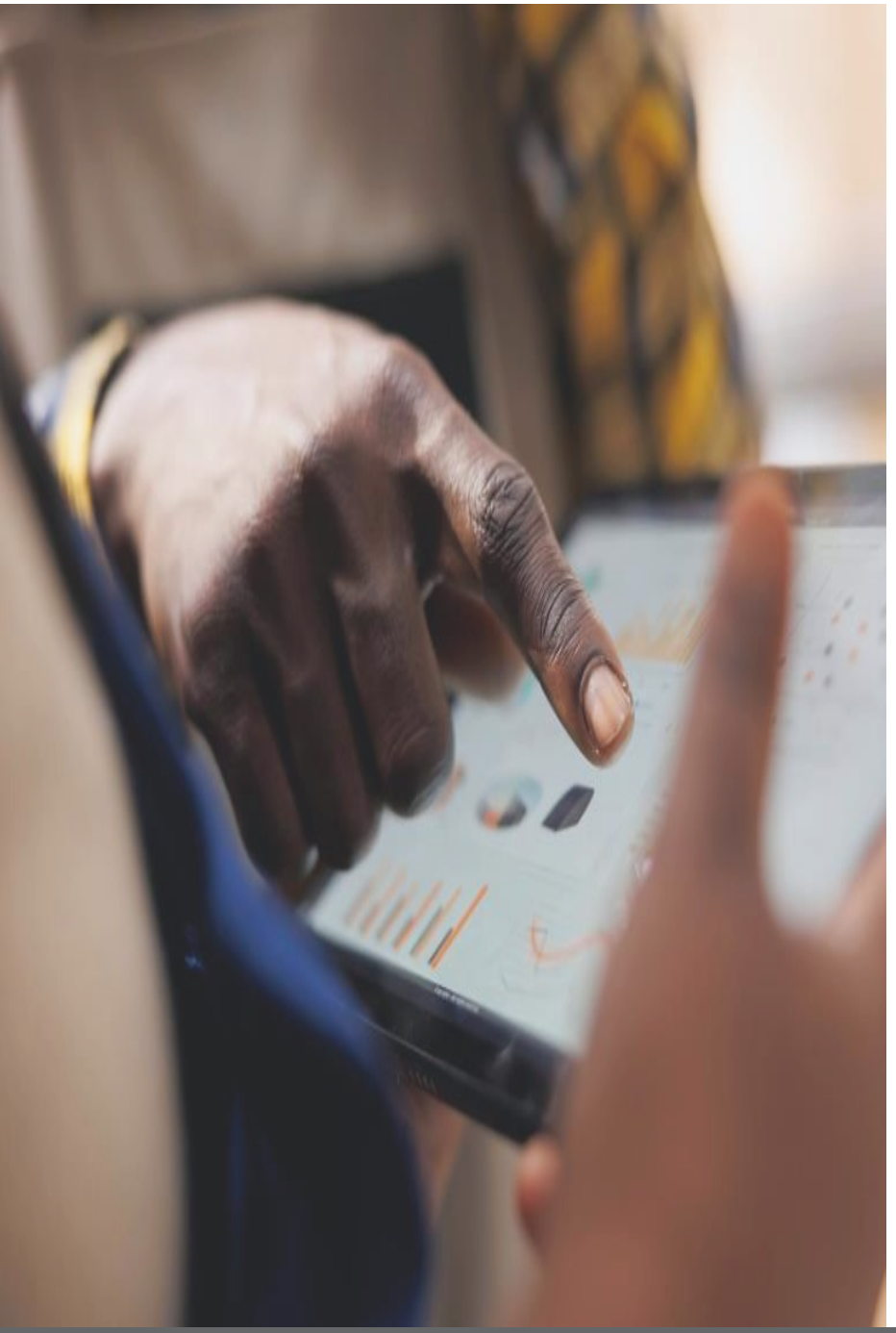
Step 4: Regional assessment of the current concentration of the Export Basket. Assessing the current composition of the regional export basket is essential to understand the level of export concentration and associated risks. Complementing this analysis with indicators of vulnerability and sophistication helps evaluate the region's exposure to competition and analyse whether shifting towards more sophisticated products is desirable, as such products are linked to faster economic growth.

Why these sequential steps are useful?

Step 5: Regional assessment of the ability to diversify exports. Evaluating the region's historical ability to diversify exports provides insights into its capacity to pursue a diversification strategy. Regions with a record of successfully expanding or adapting their export base are generally better positioned to undertake a new diversification process.

Step 6: Regional assessment of social aspects. It is important to assess the social implications of the regional economic structure. This involves identifying whether key subsectors generate significant employment and considering the level of female participation. Understanding these dynamics helps anticipate the potential impact of a transition, particularly in coal-dependent regions, and identify alternative sectors that could generate jobs and inclusive growth.

Step 7: Regional assessment of environmental aspects. Finally, an environmental assessment examines whether the main regional subsectors beside the coal sector are energy-intensive, rely on renewable energy, or are highly polluting in terms of emissions. This information is essential to ensure that future economic diversification strategy is environmentally sustainable and aligned with the goals of a just transition.



2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications: examples based on case studies of Antofagasta – Chile and East Kalimantan – Indonesia

There are many quantitative indicators available for assessing the degree of economic diversification, along with complementary social and environmental aspects that contribute to an objective diagnostic as part of a strategy design process. This section aims to present a selection of indicators (by each step) taken from EQuIP and DIVE tools that could be used at the regional level.

The next slides presents in detail **the sequential steps** that a region can follow to conduct an **economic diversification diagnostic.** They include:

- **Main international classifications**
  - ✓ ISIC used to classify economic activities, providing the framework for organising production and employment data
  - ✓ HS used to classify trade data, categorising exported products

- **Indicators** highlighting
  - ✓ The underlying logic and interpretation
  - ✓ The calculation method
  - ✓ The tool of origin (EQuIP or DIVE)
  - ✓ The source of information
  - ✓ The required data

- **Case study**
  - ✓ Examples of how these indicators were applied in the economic diversification diagnostic for Antofagasta, Chile and East Kalimantan, Indonesia

Step-by-step diagnostic of the current degree of economic diversification

1. Data collection

Collect country & regional economic, environmental and social data from national and international databases

Identify data availability and the level of disaggregation on ISIC and HS classifications on national and international databases for production and export data

Identify data availability and the level of disaggregation for social and environmental data classified by ISIC

Decide on the period for the analysis

The question of data availability

For the empirical analysis, **data availability is critical** and must be carefully verified, as regional datasets often present significant limitations. **Production data** is typically harder to obtain because it relies on censuses or surveys conducted by the countries' National Statistical Offices. By contrast, **export data** is usually more accessible since it is systematically collected through Customs. Consequently, in the **worst-case scenario**, if production data is entirely unavailable, the **degree of economic concentration** can at least be assessed using export data.

The next two slides present the **main international classifications** under which production and export data are categorised:

- The International Standard Industrial Classification of All Economic Activities **(ISIC)**
- The Harmonised System **(HS)**

The International Standard Industrial Classification of All Economic Activities (ISIC)

ISIC is primarily used to classify data for statistical areas related to production such as value added, employment, emissions, others. However, trade data can also be obtained according to this classification from international databases. The most current version is ISIC Revision 4, which is utilised by many countries. The classification is structured in different levels of aggregation, ranging from sections (represented by letters) to divisions (2 digit), groups (3 digit), and classes (4 digit).

Section	Divisions	Description
A	01–03	Agriculture, forestry and fishing
B	05–09	Mining and quarrying
C	10–33	Manufacturing
D	35	Electricity, gas, steam and air conditioning supply
E	36–39	Water supply; sewerage, waste management and remediation activities
F	41–43	Construction
G	45–47	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	49–53	Transportation and storage
I	55–56	Accommodation and food service activities
J	58–63	Information and communication
K	64–66	Financial and insurance activities
L	68	Real estate activities
M	69–75	Professional, scientific and technical activities
N	77–82	Administrative and support service activities
O	84	Public administration and defence; compulsory social security
P	85	Education
Q	86–88	Human health and social work activities
R	90–93	Arts, entertainment and recreation
S	94–96	Other service activities
T	97–98	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U	99	Activities of extraterritorial organizations and bodies

Division	Group	Class	Description
Division 05			**Mining of coal and lignite**
	051	0510	Mining of hard coal
	052	0520	Mining of lignite
Division 06			**Extraction of crude petroleum and natural gas**
	061	0610	Extraction of crude petroleum
	062	0620	Extraction of natural gas
Division 07			**Mining of metal ores**
	071	0710	Mining of iron ores
	072		Mining of non-ferrous metal ores
		0721	Mining of uranium and thorium ores
		0729	Mining of other non-ferrous metal ores
Division 08			**Other mining and quarrying**
	081	0810	Quarrying of stone, sand and clay
	089		Mining and quarrying n.e.c.
		0891	Mining of chemical and fertilizer minerals
		0892	Extraction of peat
		0893	Extraction of salt
		0899	Other mining and quarrying n.e.c.
Division 09			**Mining support service activities**
	091	0910	Support activities for petroleum and natural gas extraction
	099	0990	Support activities for other mining and quarrying

To access the ISIC, go to https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf; https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/ISIC_Rev_4_english_structure.Txt

The Harmonised System (HS)

HS is an internationally standardised system of names and numbers used to classify traded products. It is organised into sections (represented by roman numbers), chapters (2-digit), headings (4-digit), and subheadings. (6-digit). While the 6-digit code is standardised globally, countries can add additional digits (for example, 8 or 10-digit codes) for national purposes, allowing for further granularity in classification. The HS is typically revised every five years, with the most recent version being the HS 2022.

Section I	|	LIVE ANIMALS; ANIMAL PRODUCTS
Section II	|	VEGETABLE PRODUCTS
Section III	|	ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE ...
Section IV	|	PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO AND MANUFACTUR...
Section V	|	MINERAL PRODUCTS
Section VI	|	PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES
Section VII	|	PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF
Section VIII	|	RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF; SADDLERY AND HARN...
Section IX	|	WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK; MANU...
Section X	|	PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; RECOVERED (WASTE AND SC...
Section XI	|	TEXTILES AND TEXTILE ARTICLES
Section XII	|	FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS, SEAT-STICKS, WHI...
Section XIII	|	ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIALS; CERAMIC P...
Section XIV	|	NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, PRECIOUS METALS, ...
Section XV	|	BASE METALS AND ARTICLES OF BASE METAL
Section XVI	|	MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT; PARTS THEREOF; SO...

SECTION IV

PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES

Section Note.

16 Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates.

17 Sugars and sugar confectionery.

18 Cocoa and cocoa preparations.

19 Preparations of cereals, flour, starch or milk; pastrycooks' products.

20 Preparations of vegetables, fruit, nuts or other parts of plants.

21 Miscellaneous edible preparations.

22 Beverages, spirits and vinegar.

23 Residues and waste from the food industries; prepared animal fodder.

24 Tobacco and manufactured tobacco substitutes.

Headings	Subheadings	Description
18.01	1801.00	**Cocoa beans, whole or broken, raw or roasted.**
18.02	1802.00	**Cocoa shells, husks, skins and other cocoa waste.**
18.03		**Cocoa paste, whether or not defatted.**
	1803.10	- Not defatted
	1803.20	- Wholly or partly defatted
18.04	1804.00	**Cocoa butter, fat and oil.**
18.05	1805.00	**Cocoa powder, not containing added sugar or other sweetening matter.**
18.06		**Chocolate and other food preparations containing cocoa.**
	1806.10	- Cocoa powder, containing added sugar or other sweetening matter
	1806.20	- Other preparations in blocks, slabs or bars weighing more than 2 kg or in liquid, paste, powder, granular or other bulk form in containers or immediate packings, of a content exceeding 2 kg
		- Other, in blocks, slabs or bars :
	1806.31	-- Filled
	1806.32	-- Not filled
	1806.90	- Other

To access the HS, go to https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/nomenclature/activities-and-programmes/30-years-hs/hs-compendium.pdf
https://unstats.un.org/unsd/classifications/Econ/download/In%20Text/HSCodeandDescription.xlsx

Step-by-step assessment of the current degree of economic diversification

2. Country´s assessment of the productive & export structure

Understand the degree of concentration /diversification in COUNTRY's production and export's structure, along with the vulnerability of exports in terms of markets and products

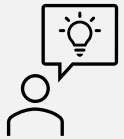
TOOL: EQuIP

Analyse the production structure of the country (indicator 1)

Analyse the export structure of the country (indicator 2)

Analyse product and market diversification of the country (indicator 3 and 4)

Indicator (1): Share of the 5 main sub-sectors in total GDP

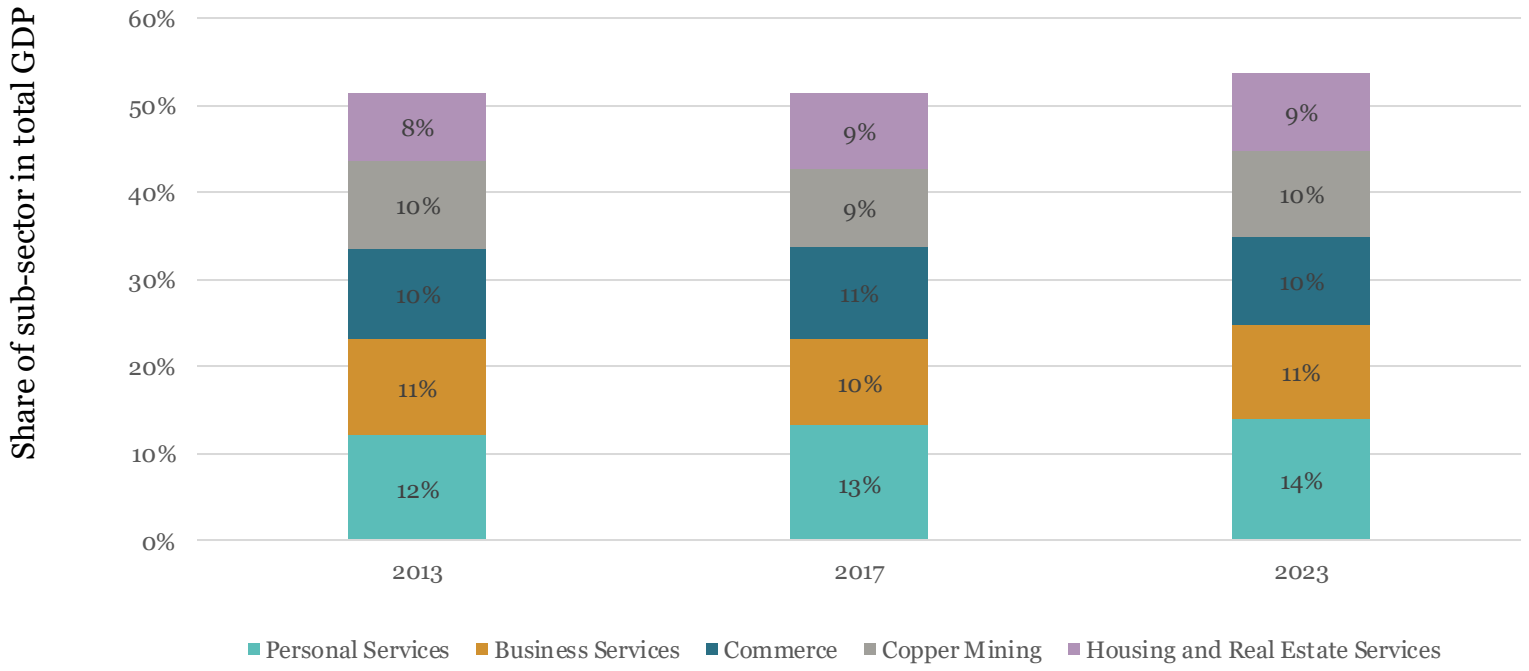


Indicator logic and interpretation:

- This indicator provides information on the **share of sub-sectors in the economy and allows to identify the degree of concentration** in a few sub-sectors. The **higher the share, the higher the level of concentration of** the economy**.**
- **Dependence on a limited number of sub-sectors makes the overall economy vulnerable** to any shocks in those industries. Shocks such as changes in demand patterns, technological advances or policy changes could have significant effects on total output and economic stability.
- In a coal regions, the weight of sectors apart from coal can be assessed

- Calculation: Sum of value added of the 5 main sub-sectors divided by total GDP.
- Source: National or Regional Accounts of the country by ISIC / Central Bank
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 3
- Data required: Value Added by ISIC at 4 digit (if not available use at 2 digit)

Case study: The Chilean productive structure has a moderate degree of concentration as 54% depend on the 5 subsectors shown in the figure (2023)



Other leading subsectors for the Chilean economy are construction, transportation, public administration, other mining activities and food activities.

These 10 economic activities accounted for 78% in 2023.

Source: Central Bank of Chile

Indicator (2): Share of the top 3 - 5 sub-sectors in total exports

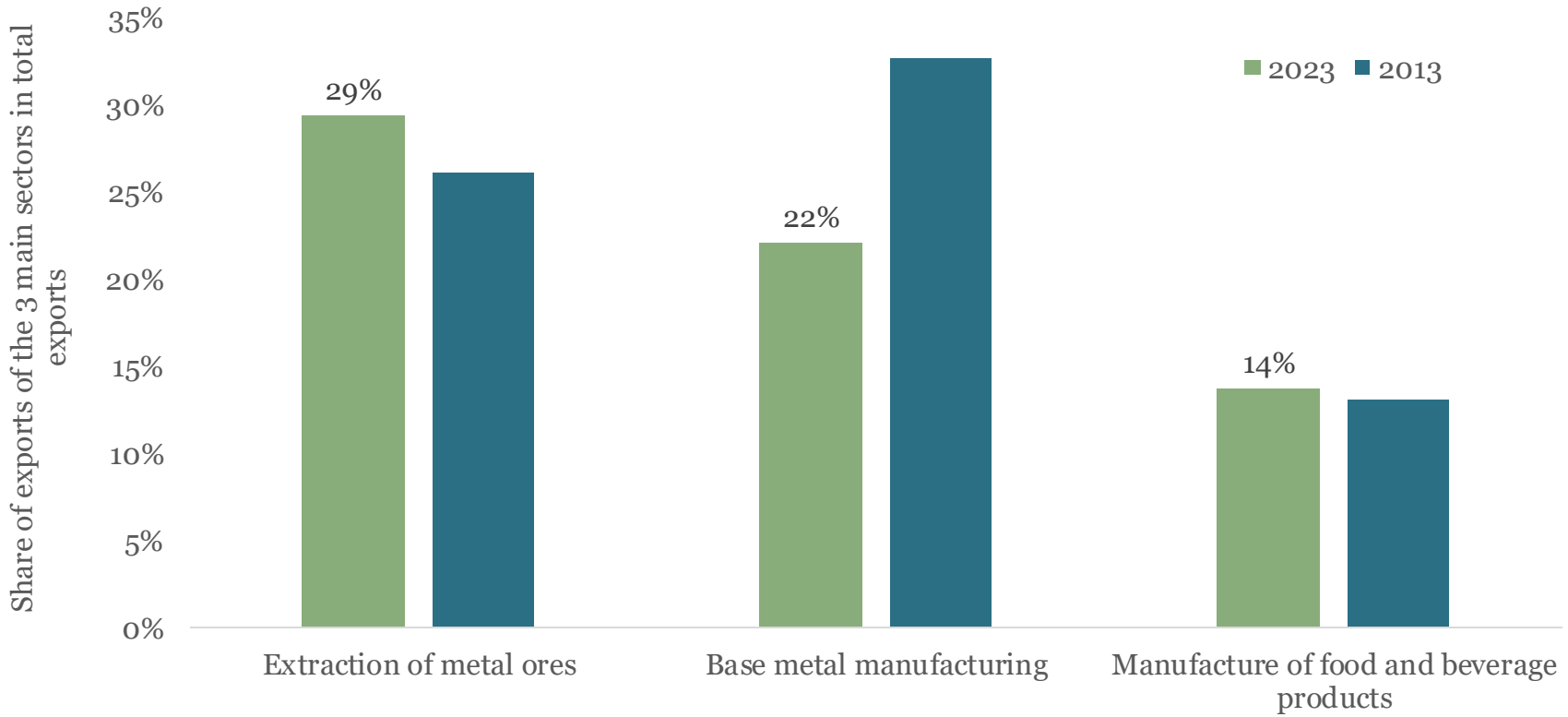
Indicator logic and interpretation:

- Allows to measure **the degree of export concentration of a country.** High export dependence on a few sub-sectors creates risks for the economy, as economic crises or shocks in these areas can result in a substantial decline in export revenues and overall economic instability. Monitoring these factors is essential for identifying vulnerabilities and potential risks.
- The **higher the export share, the higher the level of concentration.**

- Calculation: Sum of the export value of the 3 or 5 main sub-sectors divided by total exports
- Source: UN-COMTRADE through WITS by ISIC
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 3
- Data required: Export value by ISIC at 4 digit (if not available use at 2 digit)

WITS (World Integrated Trade Solution) is an online platform developed by the World Bank in collaboration with other institutions that centralises global trade data—including exports, imports, and tariffs—from databases such as UN-COMTRADE. Access is free (with limits) and registration is required. To register, visit: https://wits.worldbank.org/WITS/WITS/Restricted/Login.aspx

Case study: Chile's exports are concentrated in 3 main sub-sectors accounting for 65%, the main one being the extraction of metal ores (29%) where exports of unprocessed copper represented almost the totality



Source: UN-COMTRADE via WITS

Case study: Chile's level of export concentration is not among the highest in Latin America, countries such as Uruguay and Argentina may be more exposed to shocks

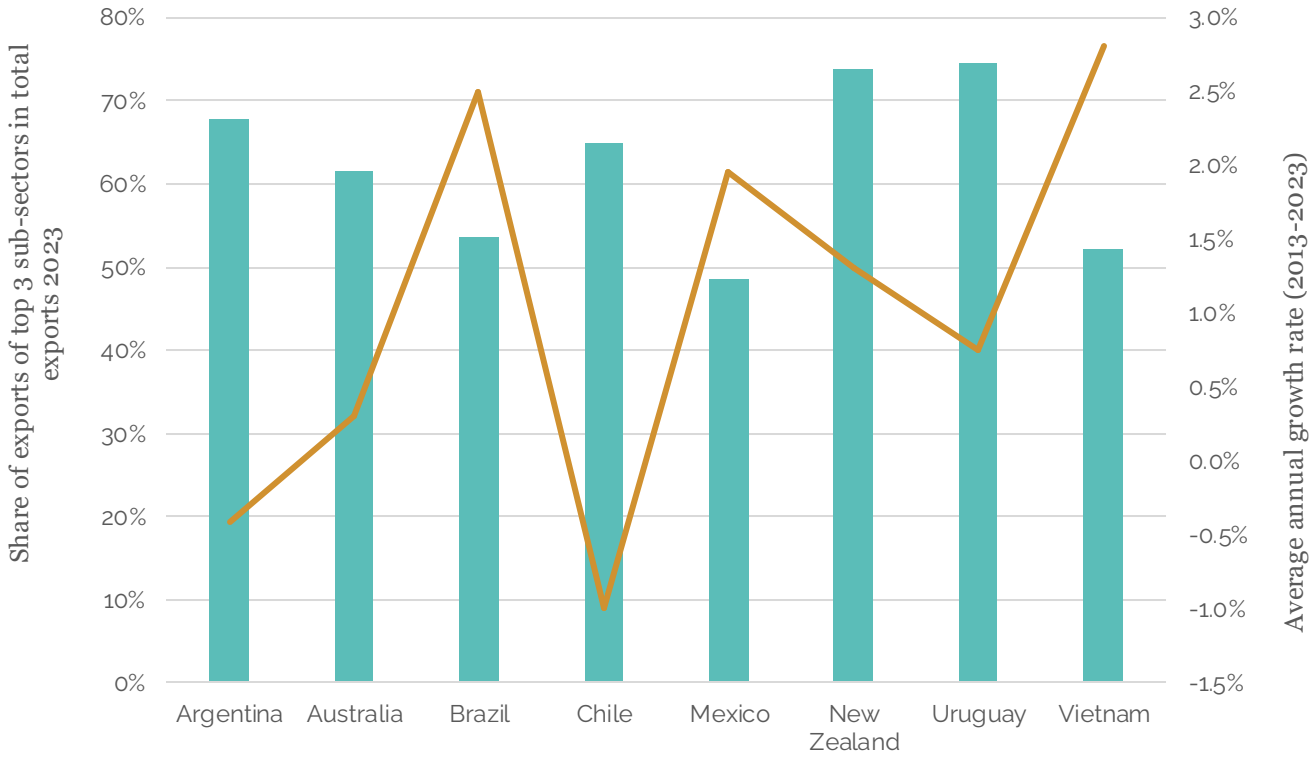
Criteria for selecting benchmarks

Neighbouring countries, which share the same geographical advantages and disadvantages and have similar production structures (e.g. ARG, BRA, URU;

Immediate competitors, both regionally and internationally, specialising in the same industrial sectors (e.g. ARG and AUS in the lithium sector);

Future competitors, both regionally and internationally, that may pose competitive threats in sectors where the country enjoys a comparative advantage; (URU, MEX, BRA in green hydrogen sector);

Role models, which are a realistic target to aim for; (AUS, NZ on renewables energies).



Source: UN-COMTRADE through WITS

Note: To calculate the average annual growth rate use: (((Exp value 2023/Exp value 2013))^(1/# years under analysis-1)))-1

Indicator (3): Product Diversification Index (PDI)

Indicator logic and interpretation:

- The **PDI assesses a country's product diversification by comparing its export structure with the world export structure.** It thus provides an indication of the extent to which a country's export supply is aligned with world market demand.
- The **PDI states that it is desirable for countries to reflect global demand** as closely as possible. The logic is that **diversification makes more sense if it means adding sub-sectors or products for which there is global demand.**
- **Lower PDI values indicate a lower degree of** export **product diversification** and a larger gap between the country's export structure and the world export structure.
- **Higher values indicate a more diversified** and more balanced **export basket**, which is more strongly aligned with global demand.

- Calculation: The Product Diversification Index (PDI) is calculated by comparing the absolute deviation of the country's export structure (in terms of products) with the world structure:

$$PDI_j = 1 - \frac{\sum(|h_{i,j} - h_i|)}{2}$$

where PDI_j is the value of country j product diversification index; Σ is the sum of all values in absolute terms; hij is the share of product i in country j total exports; hi is the share of product i in total world exports. The PDI is normalised so that it takes values ranging from 0 to 1 and then subtracted from 1. Thus, a score of 0 indicates low levels of diversification and alignment with world demand, while a score of 1 means high levels of diversification and alignment with world demand.

- Source: UN-COMTRADE through WITS by ISIC
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 3
- Data required: Export value by ISIC at 4 digit (if not available use at 2 digit)

Indicator (4): Market diversification index (MDI)

Indicator logic and interpretation:

- The **MDI compares the country's export structure (in terms of markets) with the world structure**, showing whether it corresponds or not, with the understanding that the world has the most diversified structure.
- It shows the degree to **which a country depends on specific markets for its exports relative to the importance of these markets for world imports.**
- Sometimes **the concentration of exports in a few key markets can be justified by global demand**; it makes little sense to diversify exports to markets that absorb little or no imports. This implies that **diversification makes more sense if it means adding new markets where demand is significant or growing.**
- **Lower values of the MDI indicate a lower degree of market diversification** and a larger gap between the country's market structure and the global structure.

- Calculation: The Market Diversification Index (MDI) is calculated by comparing the absolute deviation of the country's export structure (in terms of markets) with the global structure:

$$'MDI_j = 1 - \frac{\sum(|h_{i,j} - h_i|)}{2}$$

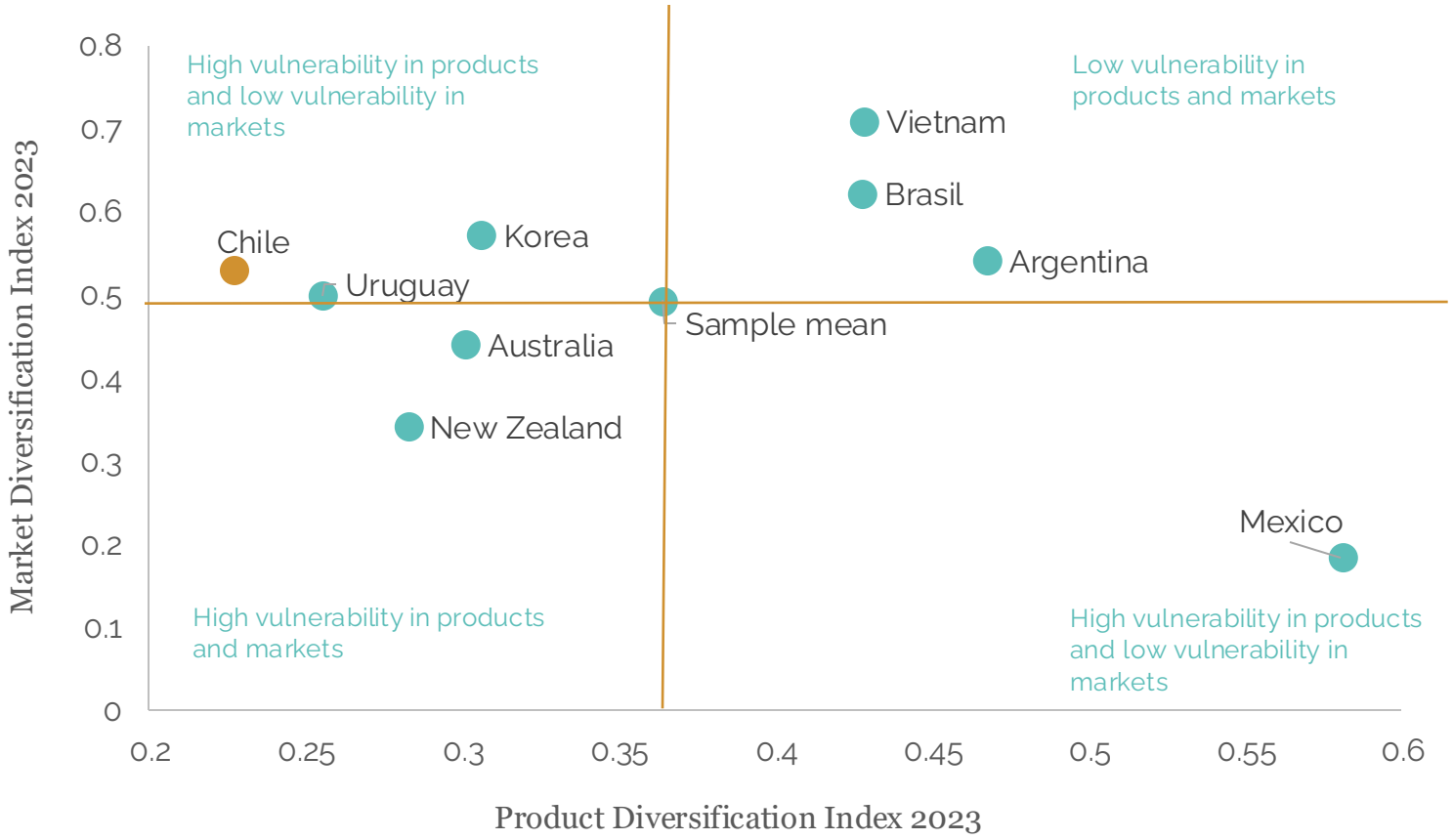
where MDI_j is the value of country j market diversification index; Σ is the sum of all values in absolute terms; hij is the share of market i in country j total exports; hi is the share of market i in total world exports. The MDI is normalised so that it takes values ranging from 0 to 1 and then subtracted from 1. Thus, a score of 0 indicates low levels of diversification and alignment with the global market structure, while a score of 1 means high levels of diversification and alignment with the global market structure).

- Source: UN-COMTRADE through WITS by ISIC; Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 3
- Data required: Total export value to all markets in the world using ISIC

Case study: In 2023 Chile showed low diversification in products (in contrast to countries in the Latin America) and higher diversification in markets. This resulted in high vulnerability at product level

The Vulnerability Matrix

Combining the two Diversification Indexes (PDI and MDI) enables to identify the level of vulnerability of a country in terms of both products and markets, based on the observed concentration levels.



Source: UN-COMTRADE through WITS

Step-by-step assessment of the current degree of economic diversification

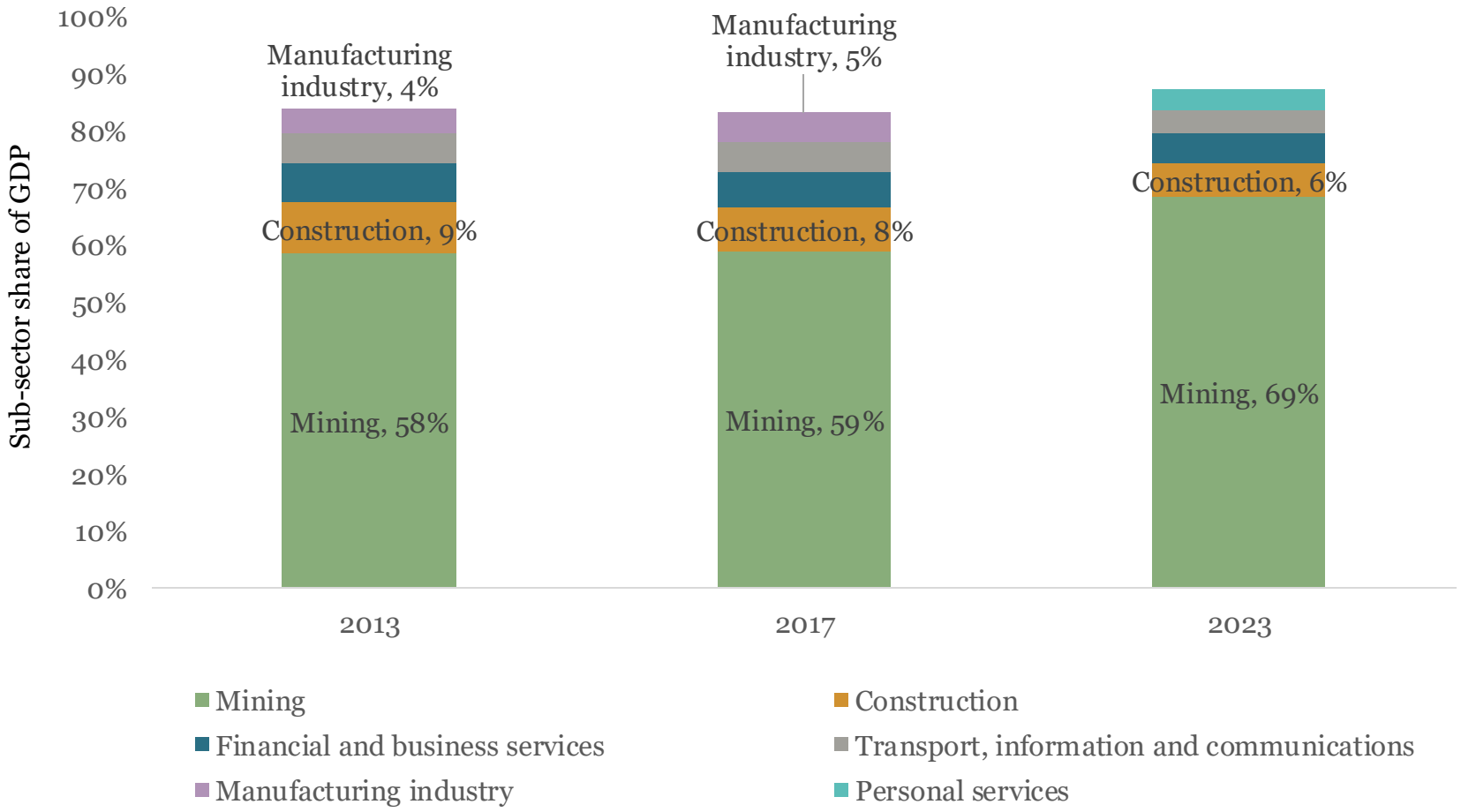
3. Regional assessment of the productive structure

Identify the degree of production concentration or diversification in the REGION

TOOL: EQuIP

Analise the production structure of the region and which sectors are leading the regional economy (indicator 1)

Case study: In Antofagasta, the level of productive concentration is significant, with almost 60% dependent on the mining sector

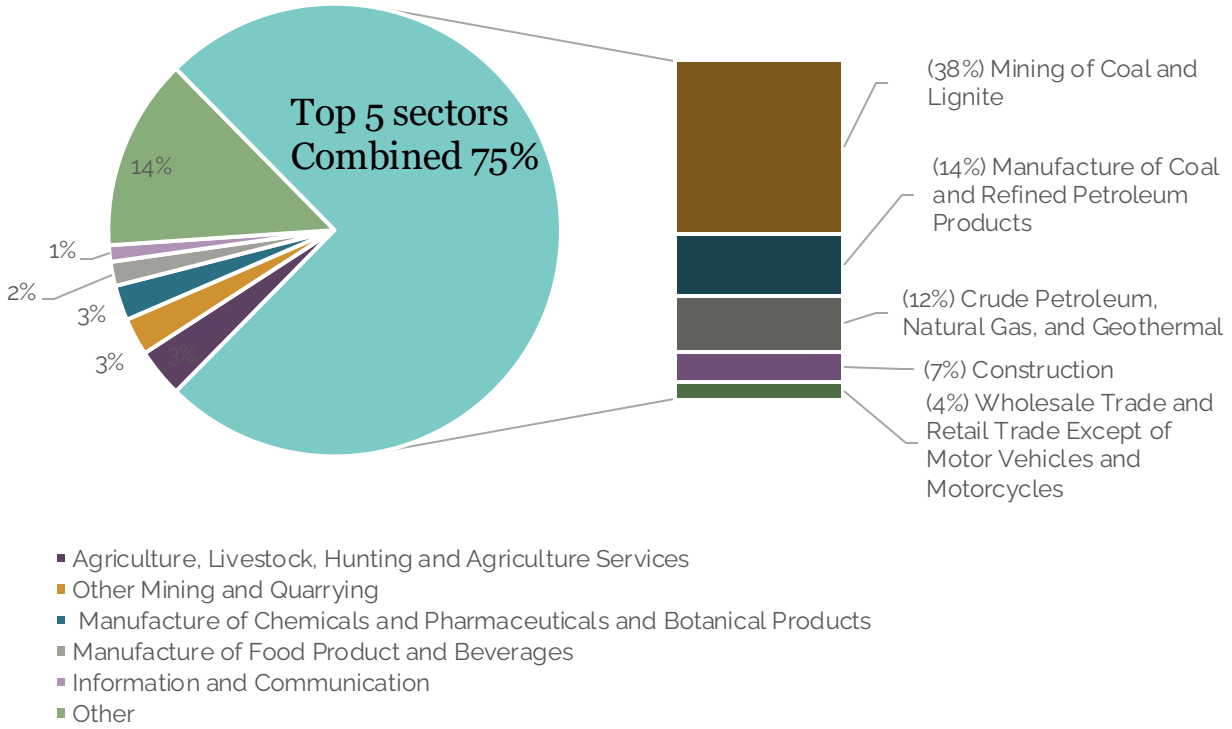


Source: Central Bank of Chile

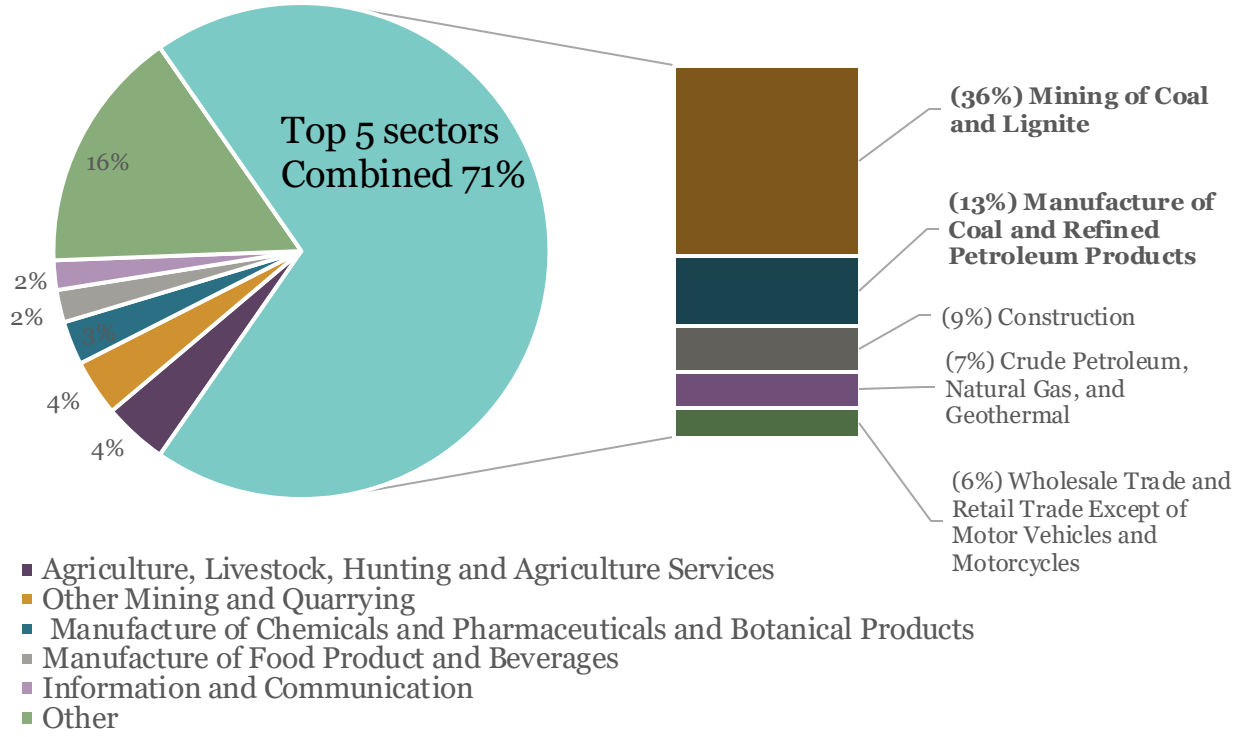
Apart from the significant concentration on the mining sector, there are other activities that are leading the regional economy like construction; financial and business services; transport, information and communications; and personal services.

Case study: East Kalimantan has a highly concentrated economic structure (top 5 sectors account for 71% of GDP in 2023). Limited diversification progress over the last 10 years

Share in 2013 regional GDP



Share in 2023 regional GDP



Diversification is not only important in the context of coal phase-down, but to make the regional economy less vulnerable!

Source: National Statistics

Step-by-step assessment of the current degree of economic diversification

4. Regional assessment of the current specialisation of the export basket

Analyse the degree of concentration and vulnerability of the export basket in the REGION

TOOL: DIVE

- Determine the Revealed Comparative Advantage (specialisation) of each product exported by the region (indicator 5)
- Define the Export Basket of the region with specialised products
- Identify the level of concentration of the Export Basket of the region (indicator 6a or 6b)
- Define the level of vulnerability of the Export Basket of the region (Indicator 7a and 7b)

Indicator (5): Product Revealed Comparative Advantage (RCA)

Indicator logic and interpretation:

- The RCA index compares the export structure of a region (numerator) with the export structure of the world (denominator) for a specific product. If the RCA > 1 for a region in product i means that is specialised in that product.
- It is generally beneficial for a region to have a greater number of products with revealed comparative advantage. A wider range of products can indicate a diversified economy, making it less vulnerable to external shocks and fluctuations in demand for specific goods.
- Additionally, this diversification can lead to more stable economic growth, job creation, and enhanced resilience in the face of market changes.

- Calculation: The Balassa Revealed Comparative Advantage Index is used to quantify the degree of specialisation of a region in each export product i, in each year t, compared to the structure of the world.

$$RCA_{ikt} = \frac{x_{ikt} / \sum_i x_{ikt}}{\sum_k x_{ikt} / \sum_i \sum_k x_{ikt}}$$

where x_{ikt} is the export value of product i in the region k at time t. The $\sum_k x_{ikt}$ is the export value of product i in the world at time t.

BACI (Base pour l'Analyse du Commerce International) is a detailed international trade database developed by **CEPII (Centre d'Études Prospectives et d'Informations Internationales, a French research institute).** It harmonises and reconciles UN COMTRADE data to correct for inconsistencies between exporters' and importers' reports. To access BACI go to: https://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele_item.asp?id=37

- Source: Custom Office in a country and BACI/CEPII Data required: Export values by HS at 4 o 6-digit
- Tool: Diversifying Industries and Value Chains for Exports (DIVE-Component 1)

Identifying the Export Basket with specialised products at a regional level

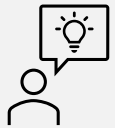
Total export include all products that the region exports in a specialised or non-specialised manner. This means that consider products with RCA>1 and RCA<1)

As part of this step and after calculating the Revealed Comparative Advantage for each exported product by the region, it is necessary to **identify the Export Basket with specialised products.**

A product is included in a region's Export Basket only if the RCA >1 for at least two years in the interval (t, t+2). This means that the **Export Basket** only considers products in which the **region shows relative specialisation** with respect to a *benchmark* (usually the world economy).

Every time the following indicators refer to Export Basket consider this explanation.

Indicator (6a): Share of top 3 - 5 products in the Export Basket of the region



Indicator logic and interpretation:

- Measures **the degree of concentration of a region's Export Basket with specialised products.** High export dependence on a few products creates risks for the economy to crises and shocks.
- The **higher the export share, the higher the level of importance;** but also the **higher level of** export **concentration.**

- Calculation: Sum of the value of exports of the 3 - 5 products divided by exports of specialised products included in the Export Basket.
- Source: Custom Office in a country and BACI/CEPII
- Tool: Diversifying Industries and Value Chains for Exports (DIVE-Component 1)
- Data required: Export values by HS at 4 o 6-digit

Case study: Antofagasta's Export Basket is highly concentrated on few products that are natural resources

Code (HS 1992)	Product description	Sector	Exports in 2023 (USD million)	Share in total exports 2023	Cumulative participation
7403	**Refined copper and copper alloys**	**Metals**	**13,370.00**	**33.67%**	**33.67%**
2603	**Copper ore**	**Minerals**	**12,620.00**	**31.77%**	**65.44%**
2836	**Carbonates**	**Chemicals**	**6,063.00**	**15.27%**	**80.71%**
2613	Molybdenum ore	Minerals	1,733.00	4.36%	85.07%
7402	Unrefined copper	Metals	1,585.00	3.99%	89.06%
2801	Iodine	Chemicals	1,017.00	2.56%	91.62%
2825	Base metal oxides, n.e.c.	Chemicals	1,010.00	2.54%	94.16%
2834	Nitrites, nitrates	Chemicals	285.00	0.72%	94.88%
3105	Mixed fertilisers	Chemicals	198.40	0.50%	95.38%
3102	Nitrogenous fertilisers	Chemicals	181.40	0.46%	95.84%

Source: Chilean Customs Office

Metallic, mineral and chemical products cover 80.7% of the region's Export Basket. Specifically, copper and processed copper products are the core of the region's exports (69.4%) and are also among the most important for the national economy.

Indicator (6b):Hirschman-Herfindahl Index (HHI) to identify the degree of concentration of the Export Basket as a whole

Indicator logic and interpretation:

- The **HHI** index **of the export basket allows to identify the degree of concentration of the basket as a whole, in products with a high level of specialisation** (products where the region has developed capacities and depending on whether these capacities are easy or difficult for other regions to acquire, it can generate greater or lesser vulnerability for the region.
- **High levels of Export Basket concentration pose risks** to a region's economy by making it **vulnerable to fluctuations in global demand, price volatility or shocks** in specific industries.
- An **HHI** index **of the Export Basket close to 1 implies higher concentration**

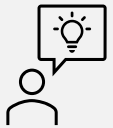
- Calculation: Sum of the squared shares of products in total exports as follow:

$$HHI_{kt} = \sum_{i} expshare_{ikt}^{2}$$

where i refers to products, k to regions and t to time. It is a measure bounded between 0 and 1 where 1 represents the presence of a unique product in the exports.

- Source: Custom Office in a country and BACI/CEPII Data required: Export values by HS at 4 o 6-digit
- Tool: Diversifying Industries and Value Chains for Exports (DIVE-Component 1)

Indicator (7a and 7b): Product and Region Vulnerability Indexes



Indicator logic and interpretation:

- **The product vulnerability index (IPVi)** seeks to understand how exposed to international competition is each product from the export basket. Vulnerability is captured based on three elements mentioned in the following slide.
- The **region vulnerability index (ISVk)** seeks to understand **how vulnerable is the type of export specialisation of the region based on the IPVi**. The ISVk allows to assess **how responsive a region's export basket can be based on its specialisation.** The higher the degree of specialisation in products that have low entry barriers, the higher the degree of vulnerability of the export basket to international competition.
- This is relevant because it can **guide policy decisions and justify the need to introduce diversification measures.**

Indicator (7a and 7b): Product and Region Vulnerability Indexes

- Calculation: the product vulnerability index is equal to the square root of the sum of the squares of the three components divided by the square root of 3 (the denominator serves to obtain an index that lies in the interval [0,1]). A vulnerable product is one with 1) a high level of path-departure (suggesting that the set of local capabilities available in the region are not difficult to acquire), 2) high ubiquity (as capabilities are present in several countries, so international competition is high), and 3) high frequency of entry (low-entry barriers and high level of competition in the medium to long term). The three dimensions are merged into a single index calculated with values ranging from 0 to 1.

$$IPV_i = \sqrt{freq_i{}^2 + pathdepa_i{}^2 + ubiq_i{}^2} \Big/ \sqrt{3}$$

where IPVi is the vulnerability index of product i, $freq_i$ is the frequency index of product i, $pathdepa_i$ is the path-departure of product i, and $ubiq_i$ is the ubiquity index of product i

Turning to the regional dimension, is possible to calculate the structural vulnerability index of the Export Basket for the region as a whole as the weighted average of the product vulnerability indices, where the weights are given by the export shares of product i from region k.

$$ISV_k = \sum_i sh_{ik} IPV_i$$

where ISVk is the vulnerability index of region k, sh_{ik} is the structural vulnerability index of the Export Basket of region k

- Source: Custom Office in a country and BACI/CEPII Data required: Export values by HS at 4 o 6-digit
- Tool: Diversifying Industries and Value Chains for Exports (DIVE-Component 1)

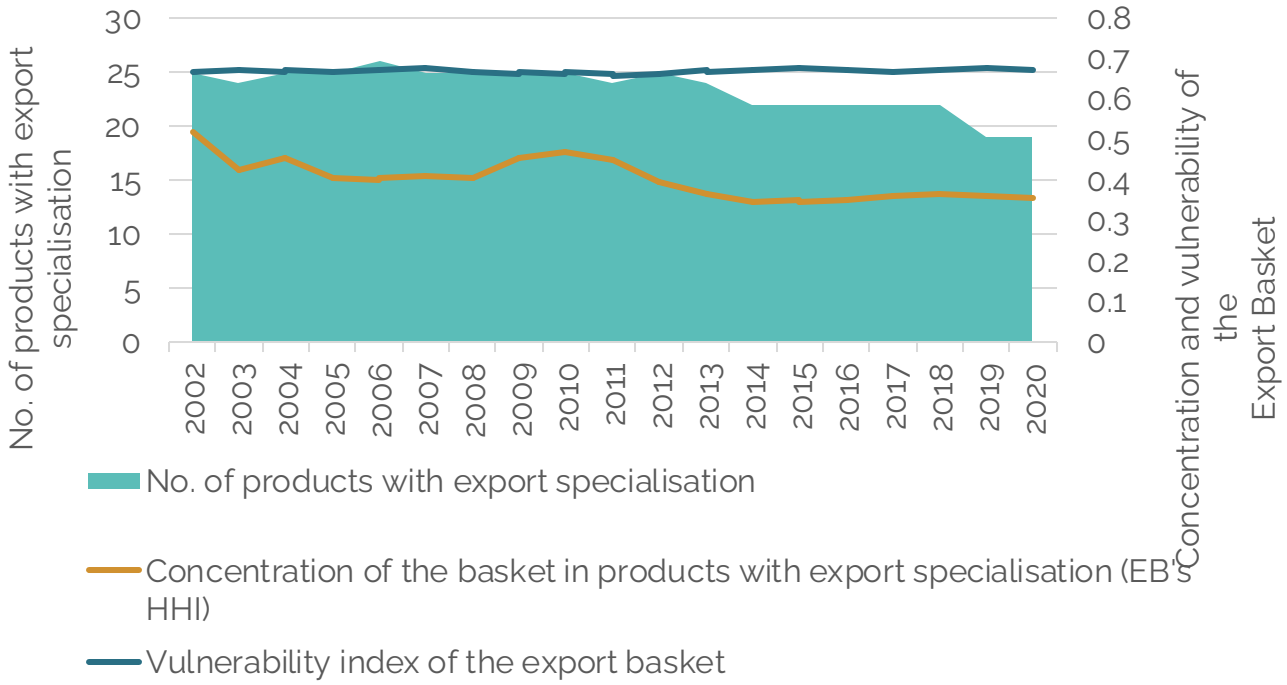
Case study: Antofagasta exhibits a highly concentrated Export Basket (outperforming its comparators), although this concentration has decreased. Despite this, the level of vulnerability has largely remained unchanged; but it is still lower than the levels recorded by Chile and the world average

Concentration and vulnerability of the Export Basket (2019-2021)

	Vulnerability index of the export basket	Concentration of the basket in products with export specialisation (EB's HHI)
Antofagasta	0.677	0.358
Chile	0.695	0.149
High-income countries	0.661	0.127
World average	0.685	0.177

Source: Chilean Customs Office and BACI/CEPII

Evolution in the level of export concentration and vulnerability for Antofagasta



Source: Chilean Customs and BACI/CEPII

Step-by-step assessment of the historical ability to diversify exports

5. Regional assessment of the ability to diversify exports

Identifies REGIONS´s new export entries in the past and their sophistication level to understand REGION's historical ability to diversify exports

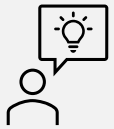
TOOL: DIVE

Determine the degree of sophistication of the Export Basket at a product and regional level (indicator 8a and 8b)

Identify new export specialisation – permanent entries (use the specified criteria slide 42)

Analise the historical ability of the region to diversify exports using the new export specialisation - permanent entries and complementing the analysis with the degree of sophistication

Indicator (8a): Sophistication of the Export Basket (at product level)



Indicator logic and interpretation:

- **The PRODY index** measures how **sophisticated** or complex is a product in the Export basket in economic terms**.** It looks at **which countries export a product and how rich those countries are**. If **rich countries** mainly export a product → the **product has a high PRODY** (it's considered sophisticated or complex). Therefore, high PRODY means that the product is linked to advanced, higher-income economies (e.g., electronics, cars).
- In line with this, r**egions that export more sophisticated products are expected to grow faster.**
- A **higher value** on the indicator means that the **degree of product sophistication is higher.**

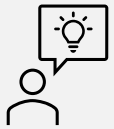
- Calculation: The product sophistication level (PRODY) is computed as the weighted average of the GDP per capita of countries exporting each product in a specialised manner worldwide.

$$PRODY_{it} = \sum_{k} \frac{x_{ikt}/X_{kt}}{\sum_{k} x_{ikt}/X_{kt}} Y_{kt}$$

where Ykt is the GDP per capita of country/region k at time t, Xikt represents the exports of product i by country/region k at time t, while Xkt represents the total exports of country /region k at time t.

- Source: Custom Office in a country and BACI/CEPII Data required: Export values by HS at 4 o 6-digit
- Tool: Diversifying Industries and Value Chains for Exports (DIVE - Component 2)

Indicator (8b): Sophistication of the Export Basket (at regional level)



Indicator logic and interpretation:

- The EXPY index seeks to **analyse the degree of sophistication of the Export Basket of the region in an aggregated measure** in order to compare it with other countries or regions. It has the same logic as PRODY.
- A **higher value** on the indicator means that the **degree of sophistication of the Export Basket of the region (as a whole) is higher.**

- Calculation: The level of sophistication of a country/region (EXPY) is calculated by the weighted average of the product sophistication level (PRODY) of goods in the Export Basket. It is a proxy indicator of the level of productivity associated with exports. It is calculated using country/region level data.

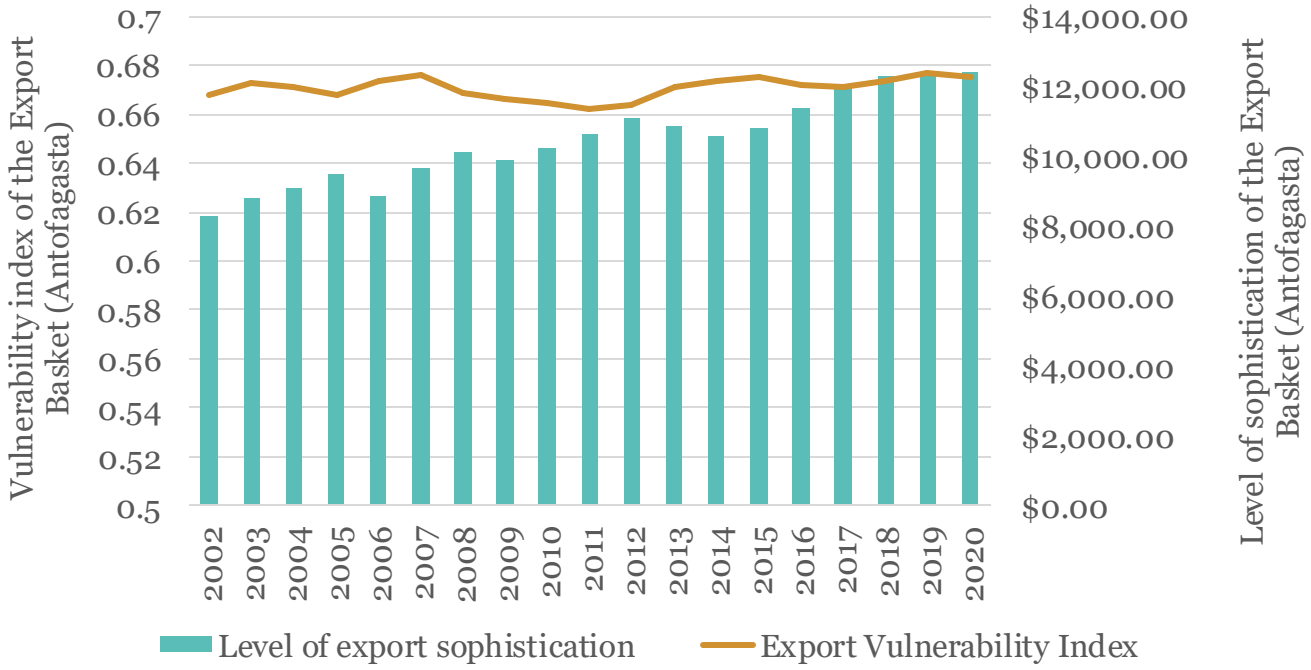
$$EXPY_{kt} = \sum_{i} \frac{x_{ikt}}{X_{kt}} PRODY_{it}$$

where Xikt represents the exports of product i by country/region k at time t and Xkt the total exports of country/region k at time t. It is thus a weighted average – with weights given by the export shares – of the PRODY.

- Source: Custom Office in a country and BACI/CEPII
- Data required: Export values by HS at 4 o 6-digit
- Tool: Diversifying Industries and Value Chains for Exports (DIVE-Component 2)

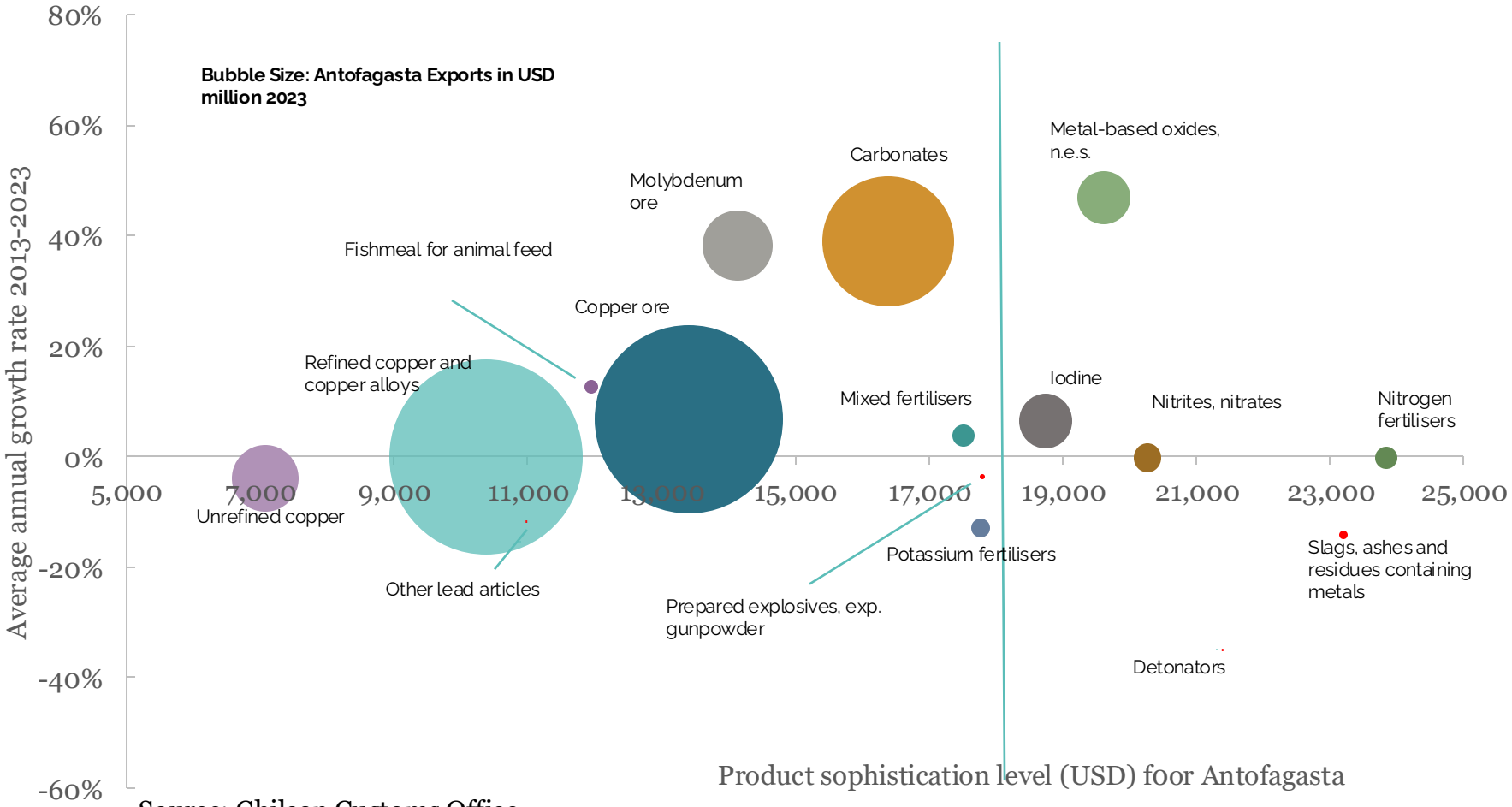
Case study: The degree of sophistication of Antofagasta's Export Basket has increased over the period and is higher than in Chile. However, still low compared to other high-income countries and the world average

	Level of sophistication of the export basket (USD)
Antofagasta	12,434.51
Chile	10,890.78
High income countries	20,605.44
World average	14,824.95



Source: Chilean Customs Office and BACI/ CEPII

Case study: The growth pattern of Antofagasta's Export Basket depends on low and moderate sophisticated products mainly from mining and agro-industry



Products on the left side of the figure have grown and show the biggest bubbles. This means that are the most important for Antofagasta´s Export Basket and are driving growth. However, these products have lower degree of sophistication (compared with products on the right side).

Source: Chilean Customs Office

Note: Note: To calculate the average annual growth rate use: (((Exp value 2023/Exp value 2013))^(1/# years under analysis-1)))-1

To understand the past ability to diversify exports the first step is identifying new export specialisation products (permanent entries)

New export specialisation (entries) of an economy (a region or a country) represents the set of products in which the economy has recently developed a comparative advantage in a stable and economically significant way (export values larger than 1 million US$). The criteria detailed below allow us to consider new products that are not just occasional or temporary or of very modest economic value.

A product is a new export specialisation at time *t* if:

i) it is exported with RCA higher than unity at time t;

ii) it has been exported with RCA lower than 0.5 for at least two of the previous 5 years;

iii) it has never been exporter with RCA higher than unity in the previous 5 years;

iv) alternatively

  a) it has been exported with RCA higher than unity for at least 2 years in the following 5 years and it has been exported with RCA lower than 0.5 for no more than once in the following 5 years;

  b) it has been exported with RCA higher than unity for the following 3 years;

i) the average export values in the following 5 years is higher than the average export values in the previous 5 years;

ii) the export value at time t is higher than 1 million US dollars.

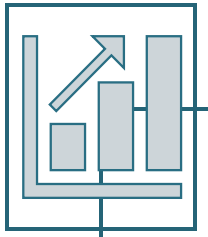
Case study: In Antofagasta three products were identified as new "permanent" specialisations. The ability to diversify has been quite limited in the region

New product entries with permanent specialisation (2002-2022)						
Year of entry	Code (HS 1992)	Product description	Sector	Latest product sophistication	Product sophistication in the entry year	
2005	2825	Metal-based oxides	Chemicals	$ 14,345.26	>	$ 9,422.55
2017	**2808**	**Sulphonitric acids**	**Chemicals**	**$ 30,909.86**	**>**	**$ 11,724.89**
2017	2715	Bituminous mixtures	Minerals	$ 22,495.37	>	$ 11,724.89

Source: Chilean Customs Office and BACI/CEPII

- Only three products represent new permanent specialisations moving from RCA values below 0.5 to values above 1 without falling back below the previous threshold.
- The two chemical products have helped and still have the potential to increase the level of sophistication of Antofagasta's Export Basket. HS 2808 showed the highest level of sophistication.

Case study: Key insights from the economic diversification analysis of Antofagasta



Economic

- **Antofagasta** registers a **high** level **of productive concentration in the mining sector and in metallic and mineral export products.** Despite the fact that the **level of concentration** of the Export Basket **has decreased.**
- The **current specialisation** of Antofagasta's Export Basket is **highly linked to products with a low level of sophistication**.
- The **level of vulnerability** of the Export Basket has remained **largely unchanged** and is lower compared to the level of **Chile and the world average,** but **above of the level of high-income countries**.
- The **ability to diversify exports** over the **last 2 decades has been limited** as only **3 products were identified as new export specialisation – permanent entries**
- Within the **3 permanent specialisations, chemicals have a high potential to drive the level of sophistication of the Export basket of the region**. The future role of 2 of them for Antofagasta is worth analysing as they entered only in 2017. In particular, HS2808 - Sulphonitric acids which is associated with a relatively high level of sophistication (the highest in the Antofagasta Export Basket) and a relatively low level of vulnerability (0.483).
- A **further decrease in the concentration of the** region's **Export Basket** together with an **increase in the share of relatively less vulnerable and more sophisticated products** could provide interesting prospects for Antofagasta.

Step-by-step assessment of social aspects as part of the economic diversification diagnostic

6. Regional assessment of social aspects

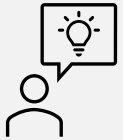
Analyse the employment situation and female participation by economic subsectors in the REGION

TOOL: EQuIP

Identify the employment situation by economic subsectors of the region (indicator 9)

Identify female participation in economic subsectors of the region (indicator 10)

Indicator (9): Share of economic subsectors in total employment

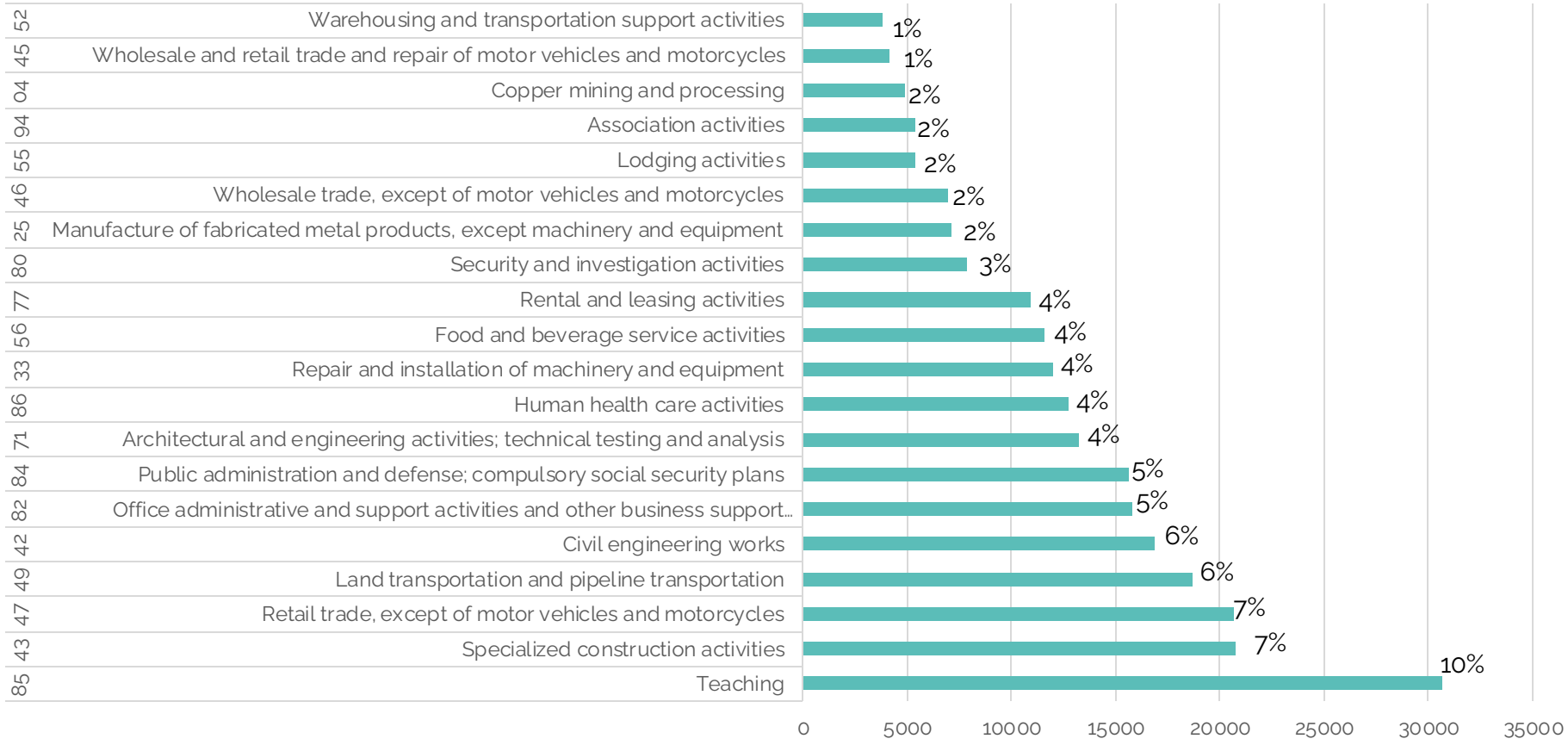


Indicator logic and interpretation:

- This indicator allows to identify how much employment is generated by economic subsectors, therefore allows to analyse potential social implications of the transition process and design strategies to plan the reallocation of employees affected (e.g. reskilling and upskilling measures).

- Calculation: Employment of each subsector divided by total employment in the region.
- Source: National Employment Survey by ISIC / National Statistics Office
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 5
- Data required: Employment by ISIC at 4 digit (if not available use at 2 or 1 digit)

Case study: The main employing subsectors in Antofagasta were administrative and tourism-related services, copper mining and related activities, and construction



In Antofagasta 20 activities accounted for 81% of total employment but the energy generation sector was not part of these.

1. Administrative and support services,
2. Construction,
3. Accommodation, food and transportation services (associated with tourism)
4. Repair of machinery and equipment
5. Manufacture of fabricated metal products
6. Copper extraction and processing

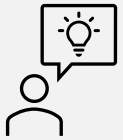
In principle, this means that the transition process to phase-out coal (close or reconvert energy plants) could have social implications in terms of unemployment but will not be massive.

However, it is worth mentioning that this information captures only direct employment. Therefore, the impact of the energy generation sector in Antofagasta could be higher in terms of unemployment..

Note: Percentage corresponds to the share of each activity to the total employment in 2023

Source: Internal Revenue Service

Indicator (10): Share of female employment in economic sub-sectors

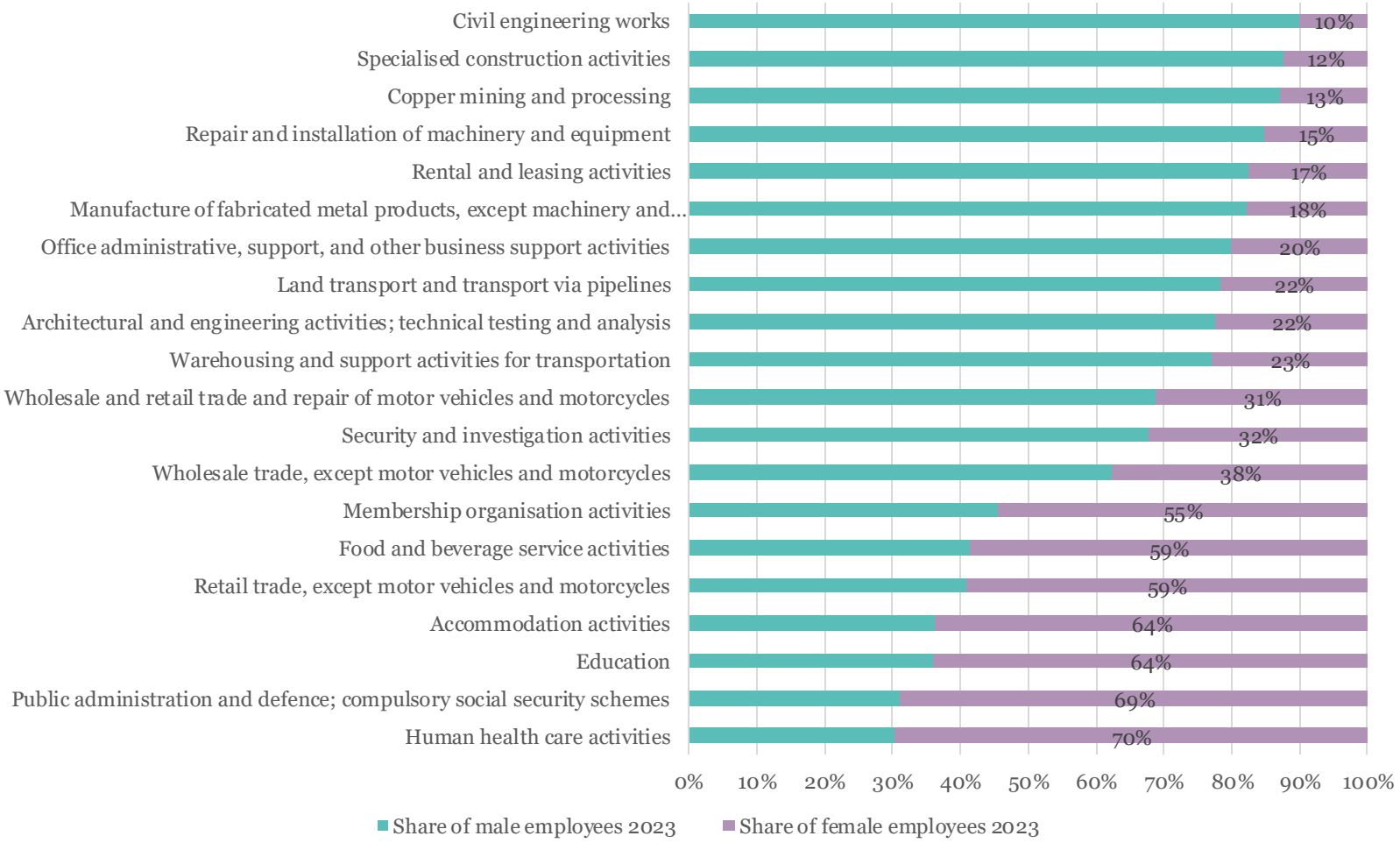


Indicator logic and interpretation:

- This indicator allows to identify female participation in economic subsectors, therefore is a measure to understand gender equality in the region,
- At the same time enables to understand the potential social implications of the transition process for this group of the population and design strategies to plan their reallocation in other industries (e.g. reskilling and upskilling measures).

- Calculation: Female employment of each subsector divided by total employment in the subsector
- Source: National Employment Survey by ISIC / National Statistics Office
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 6
- Data required: Female employment by ISIC at 4 digit (if not available use at 2 or 1 digit)

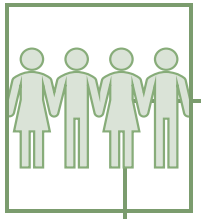
Case study: In Antofagasta administrative and support services exhibit the highest female employment participation



This suggests that these service sectors could potentially absorb women's employment during the transition process.

However, it is equally important to identify new activities that could offer better and more sustainable opportunities for women.

Case study: Key insights about social implications of phase-out coal and diversify the economy in Antofagasta



Social

- In **Antofagasta the transition process to phase-out coal** (close or reconvert energy plants) could have **social implications** in terms of unemployment but will not be massive as there are **other sectors that highly contribute to employment generation** such as administrative and tourism-related services, copper mining and related activities, and construction.
- In term of **female participation in economic activities, administrative and support services exhibits the highest contribution**. This suggests that **these sectors could potentially absorb women's employment** during the transition process. However, it is **equally important to identify new activities** that could offer better and more sustainable opportunities for women.

Step-by-step assessment of environmental aspects as part of the economic diversification diagnostic

7. Regional assessment of environmental aspects

Determine energy use and type and emissions generation by economic subsectors in the REGION

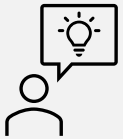
TOOL: EQuIP

Determine the energy use intensity by economic subsectors (indicators 11)

Determine renewable energy in total energy use by economic subsectors (indicator 12)

Identify CO_2 emissions intensity by economic subsectors in the region (indicator 13)

Indicator (11): Energy use intensity by economic sub-sectors



Indicator logic and interpretation:

- This indicator measures the level of energy intensity of the main economic subsectors in the region per unit of value added (including coal related activities) allowing to identify if the current productive structure is heavily reliant on energy-intensive sectors.
- Investments towards lowering the energy use intensity in production processes together with turning to more renewable energy sources, could lower the risk of energy shortages, thereby securing productivity. Low energy-intense productive sectors are better equipped to cope with environmental regulations, thus having low compliance costs

- Calculation: Energy consumption divided by value added of each subsector in the region.
- Source: National Environmental Survey or Enterprise Directory by ISIC / National Statistics Office
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 7
- Data required: Total energy use and value added by ISIC at 4 digit (if not available use at 2 digit)

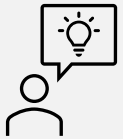
Indicator (12): Renewable energy in total energy use by economic subsector

Indicator logic and interpretation:

- This indicator measures the share of renewable energy in total energy used by economic subsectors in the region and allows to identify which rely more on clean energy. Providing clean energy and changing the energy matrix is crucial to contribute with climate action but will also open opportunities for regions with abundant renewable power sources. .
- Higher shares correspond to a higher amount of energy used from renewables

- Calculation: Renewable energy divided by total energy use of each economic subsector in the region.
- Source: National Environmental Survey or Enterprise Directory by ISIC / National Statistics Office
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 7
- Data required: Renewable energy and total energy use by ISIC at 4 digit (if not available use at 2 digit)

Indicator (13): CO2 emission intensity by economic sub-sectors in the region



Indicator logic and interpretation:

- This indicator measures the environmental impact (in terms of emissions) of economic subsectors in the region allowing to understand the potential benefits of moving away from polluting activities or investing on lowering the level of intensity.

- Calculation: Emissions (or CO2 emissions) divided by value added by economic subsector in the region.
- Source: National Environmental Survey by ISIC / National Statistics Office
- Tool: Enhanced the Quality of Industrial Policies (EQuIP) – Tool 7
- Data required: CO2 emissions and value added by ISIC at 4 digit (if not available use at 2 digit)

2.3 Quantitative tools to assess the degree of economic diversification in coal regions: introducing EQuIP and DIVE

The purpose of combining different tools to enrich the analysis and identify the best combination of indicators to use depending on data availability.

For the diagnostic of the current degree of economic diversification two main tools are suggested: Enhancing the Quality of Industrial Policy (EQuIP) and the Diversifying Industries and Value Chains for Exports (DIVE). These tools rely on production and trade data.

Introducing two quantitative tools

Enhancing the Quality of Industrial Policies (EQuIP)

Economic performance

TOOL 3
Diversification and upgrading

Social performance

TOOL 5
Income and employment

TOOL 6
Gender equality

Environmental performance

TOOL 7
Industry and Environment

UNIDO-GIZ. Supports the formulation of participatory, evidence-based policies and strategies for inclusive and sustainable industrial development.

Diversifying Industries and Value Chains for Exports (DIVE)

COMPONENT 1
Concentration, specialisation, vulnerability and sophistication of the current Export Basket

COMPONENT 2
Exports diversification ability (new permanent entries in the historical Export Basket)

UNIDO. Supports the design of diversification policies and helps address a key question about the direction an economy should take: Is it desirable to diversify exclusively into new products that rely on the existing set of capabilities and are linked to available resources (related products)? Or is it feasible to develop new specialisations in products that bear little similarity to the country's current productive structure (unrelated products)?

Tools: https://www.equip-project.org/the-equip-toolkit-2024/ , https://www.unido.org/sites/default/files/files/2023-06/DIVE_Tool_Manual.pdf

EQuIP supporting the elaboration of a diagnostic of the degree of economic diversification and its social and environmental impact

The Enhancing the Quality of Industrial Policy **(EQuIP) toolkit,** a joint effort between UNIDO and GIZ, **supports policymakers in developing countries to formulate and design participatory and evidence-based policies and strategies for inclusive and sustainable industrial development**.

The EQuIP toolkit encompasses different **toolboxes with quantitative methodologies and specific indicators to assess economic, social and environmental performance**. Here are some **toolboxes that could be used to support the analysis of the current degree of economic diversification.**

Economic performance	Social performance	Environmental performance
TOOL 3 Diversification and Upgrading	**TOOL 5** Income and employment	**TOOL 7** Industry and environment
	TOOL 6 Gender equality	

To access the toolboxes, go to https://www.equip-project.org/the-equip-toolkit-2024/

EQuIP – Tool 3 to assess diversification and upgrading

Economic performance

TOOL 3
Diversification and Upgrading

Toolbox 3 includes a range of indicators for **assessing the degree of concentration or diversification in both production and export activities**. It also incorporates the concept of **upgrading to higher value-added activities and products**, which play a crucial role in reducing vulnerability and promoting development. These **indicators can be calculated at the country level to serve as benchmarks for regional analysis**, helping to determine whether a region is overperforming or underperforming in terms of its diversification levels.

Here are some indicators from Toolbox 3 that can be utilised to evaluate the current degree of economic diversification:

Indicator
1. Share of the 5 main sub-sectors in total GDP
2. Share of top 3 or 5 sub-sectors in total exports
3. Product Diversification Index (PDI)
4. Market diversification index (MDI)

EQuIP – Tool 5 to assess social implications of economic subsectors

Toolboxes 5 and 6 provide **quantitative indicators** for analysing various **aspects of a region's labour market, including overall employment and female participation in the economy.** By examining these variables, it becomes possible to identify which sectors within the region's current productive structure are significant for employment generation and gender equality. **If a top-performing sector (within these variables) is likely to be significantly impacted by the transition, targeted initiatives could be implemented to address the associated social challenges**. In addition, it also serves to **identify main social challenges associated to the current productive structure** of the region.

Here are some indicators from Toolboxes 5 and 6 that can be utilised to understand issues related to employment generation and female participation in key economic activities of a region:

Indicator
9. Share of economic subsectors in total employment (Tool 5)
10. Share of female employment in economic subsectors (Tool 6)

EQuIP – Tool 7 to assess environmental implications of economic activities

Environmental performance

TOOL 7
Industry and Environment

Toolbox 7 provides a variety of indicators that measure and evaluate the **environmental impact of key economic sectors** and the progress of the green transition. It focuses on five thematic areas: energy and emissions, water use, material use, waste generation and management, and trade in environmental goods. In this handbook, particular emphasis will be placed on indicators that **assess whether the current productive structure of the region is heavily reliant on energy-intensive sectors, the type of energy and the level of emissions they produce**.

Here are some indicators from Toolbox 7 that can be utilised to understand environmental implications:

Indicator
11. Energy use intensity by economic sub-sectors
12. Renewable energy in total energy use by economic subsector
13. CO_2 emission intensity by economic sub-sectors

DIVE supporting the development of a diagnostic of the degree of economic diversification

The Diversifying Industries and Value Chains for Exports **(DIVE) tool** developed by UNIDO, represents an **innovative approach to shaping diversification policies.** While there is a strong global consensus on the necessity of promoting diversification, there is less agreement on how to effectively design and implement diversification and industrial strategies. The **DIVE approach helps to address a crucial question regarding the direction an economy should pursue:** Is it **desirable to diversify exclusively into new products that rely on the set of existing capabilities and linked to available endowments (related products)**? Or is it feasible to **cultivate new specialisations in products that have limited similarity with the country's existing production structure (unrelated products)?**

The **DIVE tool** proposes **three main components and several indicators and indexes to perform an economic specialisation and diversification analysis** at a country or regional level depending on data availability. Here are the **two first components that could be used to support the analysis of the current degree of economic diversification.**

Component 1	Component 2
Current specialisation Evaluates how diversified or concentrated is the export basket of the region and how vulnerable is the economy's current specialisation	**New entries in the export basket** Evaluates region´s diversification performance by exploring region's historical ability to diversify

To access the tool, go to https://www.unido.org/sites/default/files/files/2023-06/DIVE_Tool_Manual.pdf

DIVE – Component 1 to assess the current degree of specialisation / concentration

Component 1

Current specialisation

Assesses how diversified or concentrated is the export basket of the region and how vulnerable is the economy's current specialisation

Component 1 allows to identify **region's current export basket**, i.e. the **products in which the region has a revealed comparative advantage** (i.e. 'specialisation'). Based on the **structure of the export basket** is possible to identify the **degree of diversification or concentration.** In addition to this, a **product-level index of vulnerability** is calculated to measure how 'easy' the development of a specialisation in a given product is, i.e. the product's entry barrier or contestability. An **index of vulnerability** is also computed at the **regional level** to assess how contestable the region's export basket is in terms of its specialisation. The higher a country's level of specialisation in products with a low entry barrier, the more vulnerable its export basket is to international competition.

Here are some indicators from Component 1 that can be utilised to evaluate the current degree of diversification of a region:

Indicator
5. Product Revealed Comparative Advantage Index (RCA)
6a. Share of top 3 - 5 products in the Export Basket of the region
6b. Hirschman-Herfindahl Index (HHI) to identify the degree of concentration of the Export
7a. Product Vulnerability Index
7b. Region Vulnerability Index

DIVE – Component 2 to assess the region´s historical ability to diversify

Component 2

New entries in the export basket

Assesses region´s diversification performance by exploring region's historical ability to diversify

Component 2 helps to explore 'new entries' in the region's export basket over the last 15-20 years to understand its historical diversification performance. By **integrating measures of sophistication** is possible to determine **region´s past ability to diversify** and infer the likelihood of achieving further diversification in the future.

New entries are defined as products characterised by a **(non-temporary) export surge** or as a **new specialisation in products that were not exported with a revealed comparative advantage** in the preceding years.

Here are some indicators from Component 2 that can be utilised to determine the historical ability of a region to diversify:

Indicator
New entries (criteria to select products)
8a. Sophistication of the Export Basket (at product level) PRODY
8b. Sophistication of the Export Basket (at regional level) EXPY

Just Energy Transition in Coal Regions

CHAPTER 3

Defining objectives for economic diversification strategies

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

1.1 Just Transition in coal regions
1.2 Economic diversification as a key element to prepare for a Just Transition
1.3 Economic diversification strategy design to support Just Transition
1.4 Evidence-based approach for strategy design
1.5 Multi-level coordination and collaboration for effective strategy design
1.6 Ensuring participatory strategy design

2. Elaborating a diversification diagnostic

2.1 The analytical process to assess the degree of economic diversification in coal regions
2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications
2.3 Quantitative tools to assess the degree of economic diversification in coal regions

3. Defining objectives for economic diversification strategies

3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

6. Developing a Monitoring and Evaluation (M&E) framework

6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

Key messages

Policy objectives for economic diversification strategies: What they are, relevance, characteristics, steps

- **Policy objectives** for economic diversification in a region can be defined as **specific, measurable goals** that relate to distinct dimensions of the desired diversification process. They **outline expected outcomes and strategic direction for economic diversification within the just transition process.** In other words, to support the achievement of a sustainable economy that harmonises economic performance with environmental sustainability and social welfare.

- To **be effective**, policy objectives must adhere to **key characteristics**, including **specificity, measurability, achievability, relevance, and time-bound nature.** The development and prioritisation of these objectives should follow **four main steps**:
  - ✓ **Refer to national and regional major goals**, identifying those that address climate change, decarbonisation and support a just transition.
  - ✓ **Examine the economic diversification diagnostic (see Chapter 2*)*** to summarise main challenges based on the current landscape.
  - ✓ **Propose preliminary regional objectives** based on key identified challenges.
  - ✓ **Consult stakeholders** and conduct a prioritisation exercise to refine and validate the objectives.

For more details about policy objectives and the process for establishing them, **refer to Section 3.1**

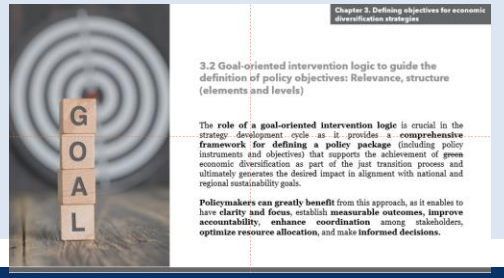
Key messages

Goal-oriented intervention logic to guide the definition of policy objectives: Relevance, structure (levels)

- A goal-oriented intervention logic provides policymakers with a **clear and structured framework for designing policy packages** in a strategy development process. It operates across **three sequential levels** and emphasises the need to:
  - ✓ **map relevant national and regional goals,** that in our area of interest, are related to climate change, decarbonisation, and just transition.
  - ✓ **define regional objectives to promote economic diversification** within a just transition process that **must be aligned to these overarching goals** (refer to the steps introduced in the previous slide).
  - ✓ **establish appropriate policy instruments** to directly contribute to achieving these objectives **(see Chapter 5)**.

The **alignment of the three levels** of the intervention logic ensures policy coherence, consistency and effectiveness in the implementation process.

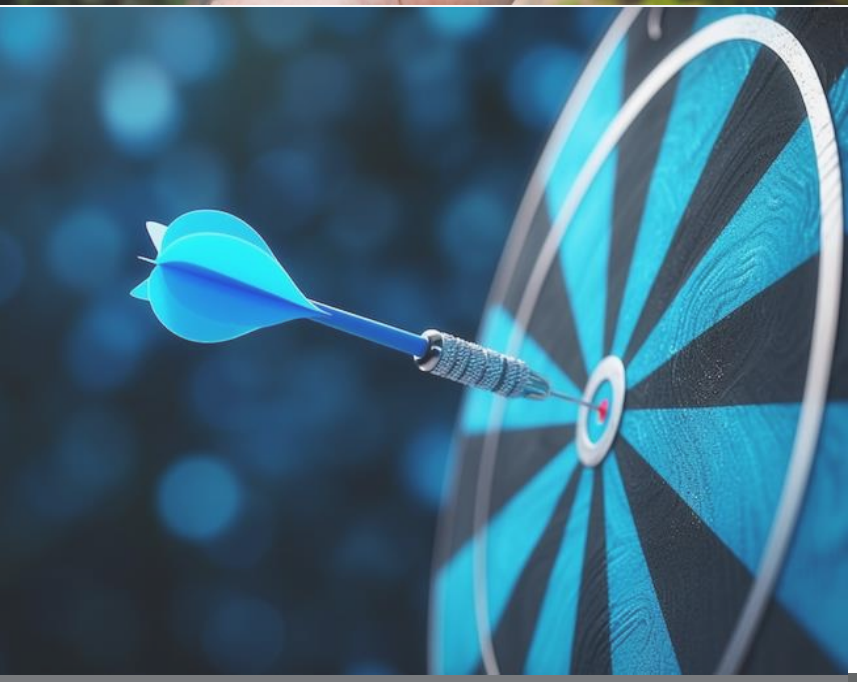
For more information of a goal-oriented intervention logic, refer to **Section 3.2.**



Content of Chapter 3

3.1. **Policy objectives for economic diversification strategies:**
What they are, relevance, characteristics, steps

3.2. **Goal-oriented intervention logic to guide the definition of policy objectives:**
Relevance, structure (elements and levels)

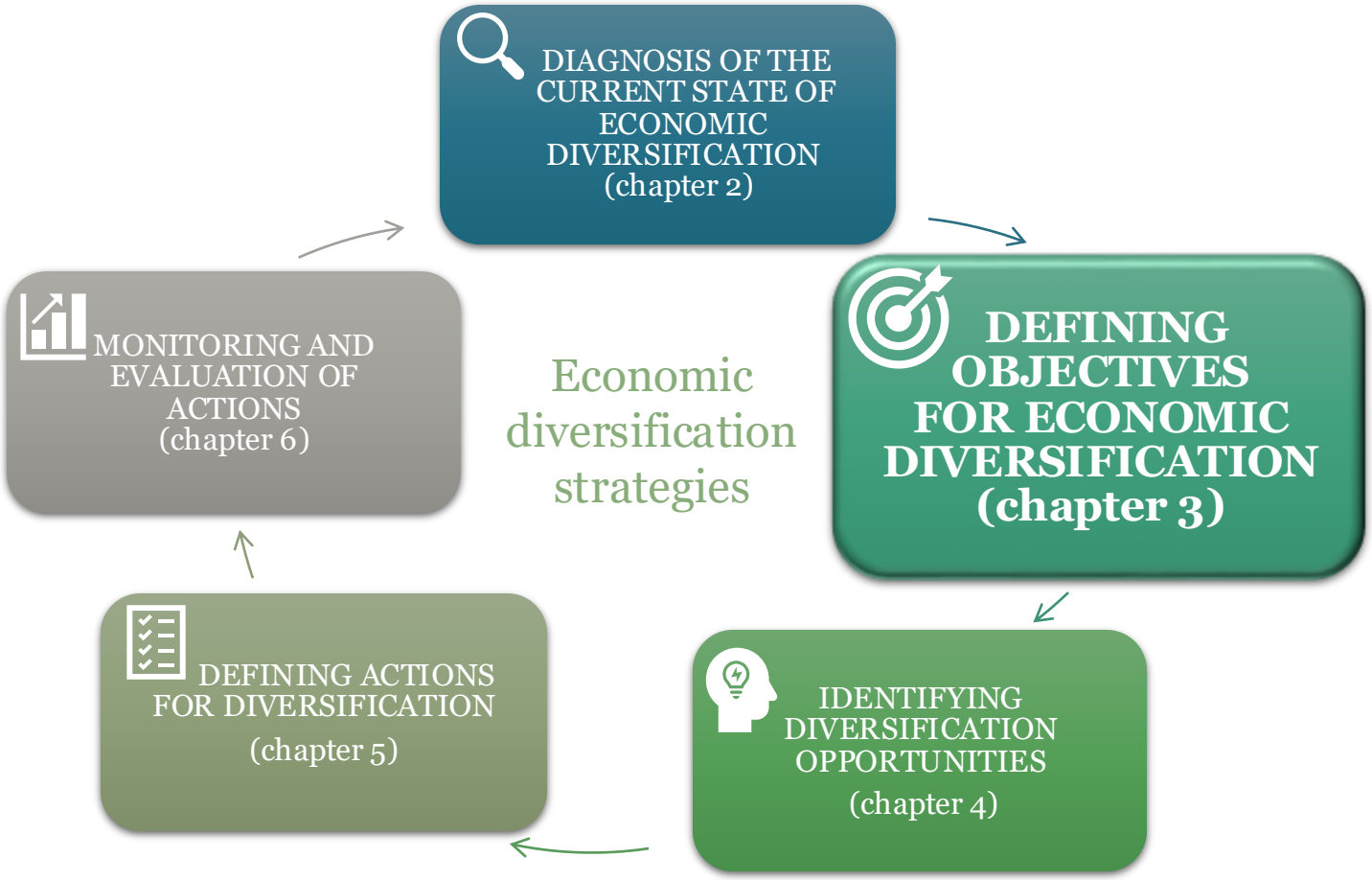


3.1 Policy objectives for economic diversification strategies: What they are, relevance, characteristics, steps

Policy objectives outline the **desired outcomes and strategic direction** for achieving a sustainable economy. They serve as **essential tools for policymakers** by offering guidance on the **type of diversification a region aims to pursue**.

To be effective, **policy objectives** must **comply** with specific "**SMART**" **characteristics** and at the same time **address the economic, social, and environmental challenges** related to the level of diversification of the region. Furthermore, these objectives should **align with key national and regional sustainability goals** and **involve a consultation process** with stakeholders. This comprehensive approach enables policymakers to create targeted strategies and deliver long-term benefits for all actors involved in the transition process.

Defining objectives in the strategy design cycle



It is an essential phase of a strategy development cycle as they provide a **strategic orientation on what** the economic diversification process is attempting **to achieve.**

What are policy objectives and why are they relevant

Policy objectives for economic diversification can be defined as specific, measurable goals that relate to specific dimensions of the desired diversification process.

These objectives seek to encourage a broader range of economic activities that leverage green technologies, reduce environmental impact, and enhance resilience to climate change, all while fostering economic growth and creating green jobs. In essence:

> *"**Policy objectives** outline the desired outcomes and strategic direction for green economic diversification within the transition process. They support the achievement of a sustainable economy that harmonises economic performance with environmental sustainability and social welfare".*

As they provide guidance on the type of diversification that a region wants to pursue is important that they comply with the following five SMART characteristics that will allow to assess if the region is achieving them.

SMART Characteristics of policy objectives

By incorporating these characteristics, economic diversification objectives can be well-defined, effectively implemented, and easily assessed for progress and impact.

Specificity: Objectives should be clearly defined and focused, outlining precisely what is to be achieved. Instead of vague goals, they should specify the target areas or outcomes.

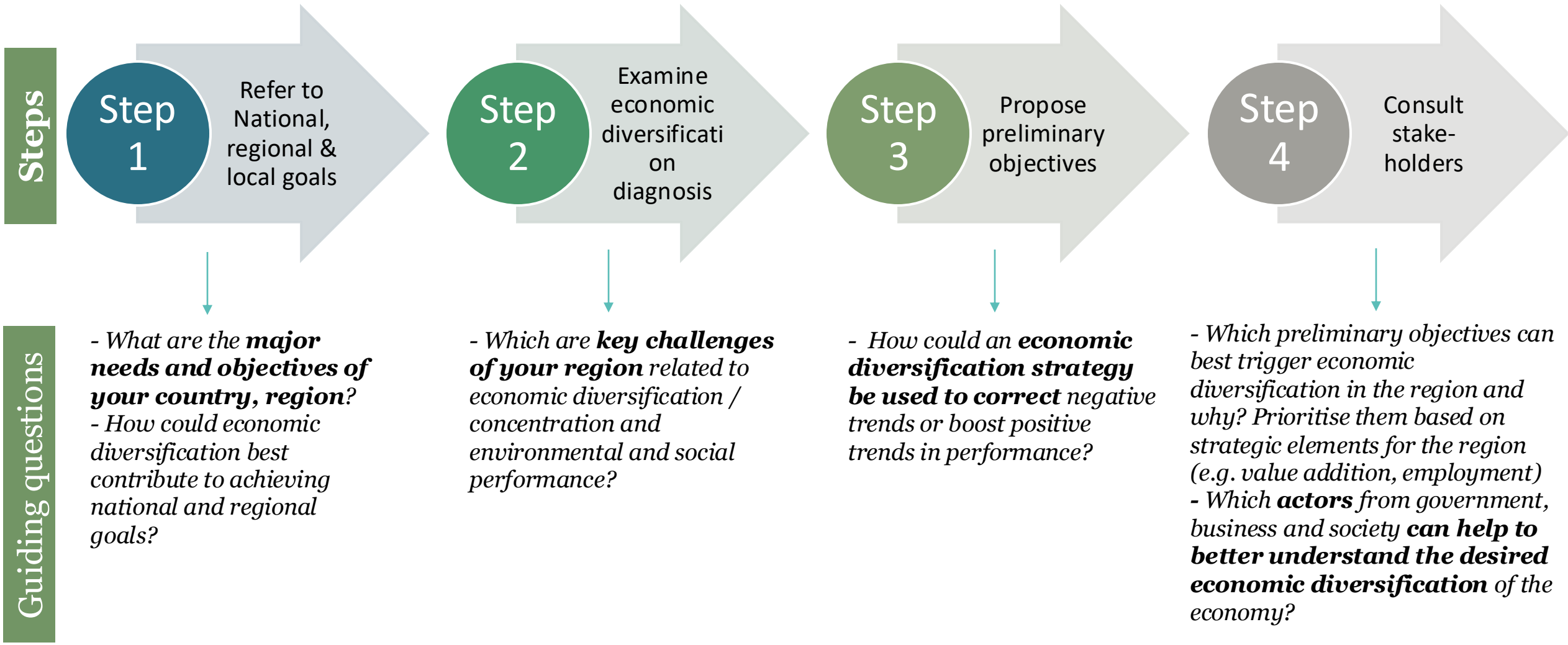
Measurability: There should be quantitative or qualitative indicators established to evaluate progress. This allows for tracking and assessing whether the objectives are being met.

Achievability: Objectives should be realistic and attainable given the available resources, technology, and socio-economic conditions. Setting achievable goals increases the likelihood of success.

Relevance: The objectives should align with broader environmental, social, and economic policies and priorities at a national, regional and local level. They should address current challenges and opportunities related to green economic diversification.

Time-bound: Each objective should have a specific timeframe for completion. This creates urgency and helps guide planning and implementation efforts.

Steps to define and prioritise policy objectives



There is a variety of possible objectives, and their definition depends on national and territorial priorities and challenges

There is no “right” objective! They need to be defined based on national context, priorities and challenges.

Economic Objectives

- Attract FDI that creates and leaves benefits in the region
- Improve productivity or value added
- Improve the level of product sophistication
- Promote economic autonomy (strategic assets)
- Reduce vulnerability

Social Objectives (Inclusiveness and Just)

- Generate quality employment
- Promote Women´s Economic Empowerment
- Improve social cohesion
- Reduce inequality
- Increase participation of vulnerable groups

Environmental Objectives (Sustainability)

- Combat climate change - mitigation (Decarbonisation, etc.)
- Promote biodiversity conservation
- Reduce waste and pollution
- Promote sustainable land use
- Promote resource conservation (Circular Economy, etc.)

Be clear about the objectives of the diversification process is key to prioritising sectors and products

Sectors contribute differently to achieve the defined objectives. There could be trade-offs but also inter-linkages

Economic Objectives:

(e.g. increase value addition & productivity)

Example: Chemicals; base metals; green hydrogen

These sectors, while good for promoting value creation and productivity:

- may not be able to generate significant employment, considering that they rely heavily on more advanced technologies **(trade-off).**
- by introducing green technologies could also support environmental objectives **(inter-linkage).**

Social Objectives:

(e.g. generation of quality employment & Women's Economic Empowerment)

Example: Agricultural products, food and beverages; textiles and apparel; furniture

These sectors, while good for generating employment and women economic empowerment:

- may not be strategic for technological development, innovation and the development of more sophisticated skills **(trade-off).**
- Could also contribute to increase value addition **(inter-linkage).**

Environmental Objectives:

(e.g. climate mitigation & waste reduction)

Example: green hydrogen; renewable energies; sustainable agriculture

These sectors while more aligned with climate change mitigation objectives:

- they are not necessarily a major source of employment **(trade-off).**
- could also be strategic to increase sophistication **(inter-linkage).**

Case study: context to define preliminary objectives for the economic diversification strategy in Antofagasta-Mejillones

Context. The **objectives** that are specified in the following slide **were defined on a participatory process** conducted as part of a workshop in Mejillones during April 2025.

The **purpose of the workshop** was:

1) share the **methodological content** of this Handbook for developing evidence-based diagnostics and identify diversification opportunities (tools and indicators introduced in Chapter 2 and 4).
2) Present **key findings from the economic diversification diagnostic for Antofagasta** (Chapter 2) and the **identified diversification opportunities** (Chapter 4).
3) Collaborate with **key stakeholders from the public, private, and academic sectors to define** preliminary regional objectives for the Antofagasta-Mejillones economic diversification strategy.

Level	Participating Institutions
Regional (Antofagasta)	Regional Ministerial Secretariat (Seremi) of Energy
	Seremi of Science
	Seremi of Public Works
	Secretariat of Regional Development and Administration (Subdere) of Antofagasta
	Production Development Corporation (Corfo)
	Ministry of National Assets
	National Service of Geology and Mining (Sernageomin)
	National Service for Training and Employment (Sence)
	Industrials Antofagasta
	H2 Antofagasta Association
	Consulting and Business Services COMOV
Local (Mejillones)	Municipality of Mejillones
	Mejillones Industrial Association

Case study: process to define preliminary objectives for the economic diversification strategy in Antofagasta-Mejillones

Process

After presenting the key findings from the economic diversification diagnostic of Antofagasta and highlighting the main economic, social and environmental challenges (Chapter 2), **working groups** were established to discuss and propose **preliminary regional objectives** for the economic diversification strategy in Antofagasta-Mejillones.

Positive aspects of the process

- Stakeholders **found the quantitative methodologies** useful for developing an economic diversification diagnostic and identifying key regional challenges,
- Stakeholders **actively participated in defining regional objectives** and demonstrated **strong engagement throughout the discussions.**

Working Groups: Defining Objectives

1. Use MENTI to select the most strategic economic, social, and environmental elements for promoting economic diversification considering national and regional goals related to climate change, just transition, decarbonization and innovative & competitive productive transformation.

Use the QR code or the following number to enter MENTI 73776356

2. In groups, choose the top 3–5 voted elements to elaborate specific objectives, considering key challenges identified in the diagnostic.
3. Each working group will prepare a proposal of 1–2 specific objectives based on the examples presented previously
4. A representative from each group will present the proposed objectives.

Case study: challenges and lessons learned from the process to define preliminary objectives for the economic diversification strategy in Antofagasta-Mejillones

Challenges

- **Stakeholder scepticism.** In Chile, stakeholders have frequently participated in policy design processes without being informed about concrete results or achievements. This situation made it challenging to secure the participation .

- **Time constraints.** The workshop had limited time to continue discussions and refine the proposed objectives due to the overlap with a regional event held on the same day.

- **Capacity gaps.** In some institutions, the designated focal points lacked the necessary technical expertise for the process.

Lessons learned

- In countries and regions that have already undergone multiple participatory processes for policy or strategy design, it is particularly important to highlight that the **economic diversification strategy** will **include a robust monitoring and evaluation system** to track, report, and communicate results and impacts.

- For workshops of this nature, **a minimum duration of four hours is recommended** to ensure adequate time for comprehensive and meaningful discussions.

- In addition to sending official requests for key institutions to designate a technical focal point with relevant expertise, it can be useful to **request a brief profile of potential participants in advance** to ensure the right mix of skills and knowledge

Case study: preliminary objectives defined for the economic diversification strategy in Antofagasta-Mejillones

Economic

- **Promote the maximisation of local benefits through** productive diversification of the region, guaranteeing the use and development of human capital and local infrastructure.
- **Increase value addition and sophistication** through the development of value chains that generate low environmental impact.

Environmental

- **Reduce greenhouse gas emissions (decarbonisation)** generated by the region's economic activities through actions such as energy efficiency, phasing out coal power plants, and decreasing waste and other sources of pollution.
- **Support territorial environmental protection** considering optimal extraction rates and efficient use of resources.

Social

- **Create green jobs in the region**, promoting the generation of employment opportunities for young people and women.

3.2 Goal-oriented intervention logic to guide the definition of policy objectives: Relevance, structure (elements and levels)

The **role of a goal-oriented intervention logic** is crucial in the strategy development cycle as it provides a **comprehensive framework for defining a policy package** (including policy instruments and objectives) that supports the achievement of economic diversification as part of the just transition process and ultimately generates the desired impact in alignment with national and regional sustainability goals.

Policymakers can greatly benefit from this approach, as it enables to have **clarity and focus**, establish **measurable outcomes, improve accountability**, **enhance coordination** among stakeholders, **optimise resource allocation**, and make **informed decisions.**

EQuIP facilitating the definition of objectives for economic diversification as part of a strategy development cycle

As highlighted in Chapter 1, the EQuIP toolkit encompasses different toolboxes with quantitative methodologies to assess industrial, social and environmental performance, as well as one specific toolbox to **guide the formulation and design of a transformative policy / strategy package for inclusive and sustainable industrial development.** See the toolbox here: EQuIP Toolbox E: Designing a transformative industrial policy package.

This last EQuIP toolbox introduces a **goal-oriented intervention logic for defining a policy package** that provides a framework to establish industrial policy objectives, intervention areas and policy instruments **that can be adapted for a green economic diversification strategy**.

The **adapted goal-oriented intervention logic for an economic diversification strategy** offers policymakers a comprehensive structure for defining a policy package that contemplates concrete **policy instruments (Level 3)** that must contribute to the achievement of specific objectives to support green economic diversification (Level 2). At the same time, these objectives need to be aligned to national and regional goals (Level 1) to ensure policy coherence and a goal-oriented approach.

Levels of a goal-oriented intervention logic

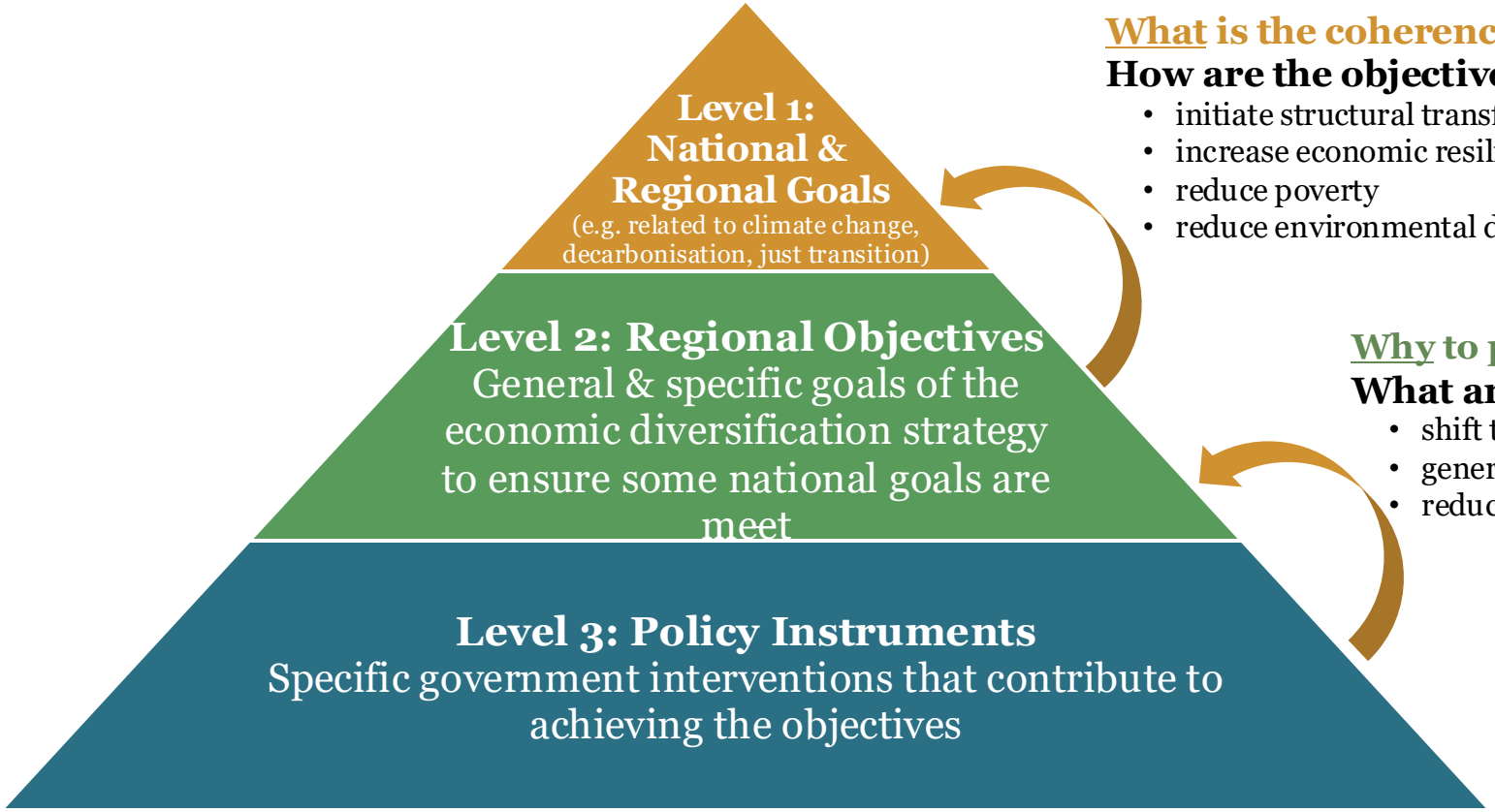
The structure of the intervention logic considers three different levels highlighted in the previous slide but also represented through case studies in the next two slides.

- **Level 1. National and regional goals.** Major goals of the economy at a regional and national level related to promoting, green economy, just transition, climate change mitigation and adaptation (e.g. decarbonisation)
- **Level 2. General and specific regional objectives for economic diversification.** General goal of promoting regional economic diversification and specific goals of the strategy to support the achievement of diversification (e.g. increase regional value addition/sophistication in low-carbon value chains).
- **Level 3. Policy instruments.** Local government interventions that contribute to achieving specific objectives (e.g. green loan to support the development of a new product) and therefore the general objective

Note: Level 3 (including examples) is explained in-depth in Chapter 5 as part of policy action planning

Structure of a goal-oriented intervention logic

The elaboration of a goal-oriented intervention logic is a sequential process that starts with the analysis of level 1 and continues with the definition of level 2 and then level 3. However, at the end of the process the most important thing is to check how each level contributes to the achievement of the previous level (see the direction of the arrows).



What is the coherence of the Economic Diversification Strategy?

How are the objectives aligned to national and regional goals?

- initiate structural transformation process
- increase economic resilience
- reduce poverty
- reduce environmental damage (e.g. decarbonisation)

Why to pursue an Economic Diversification Strategy?

What are the key objectives a region wants to achieve?

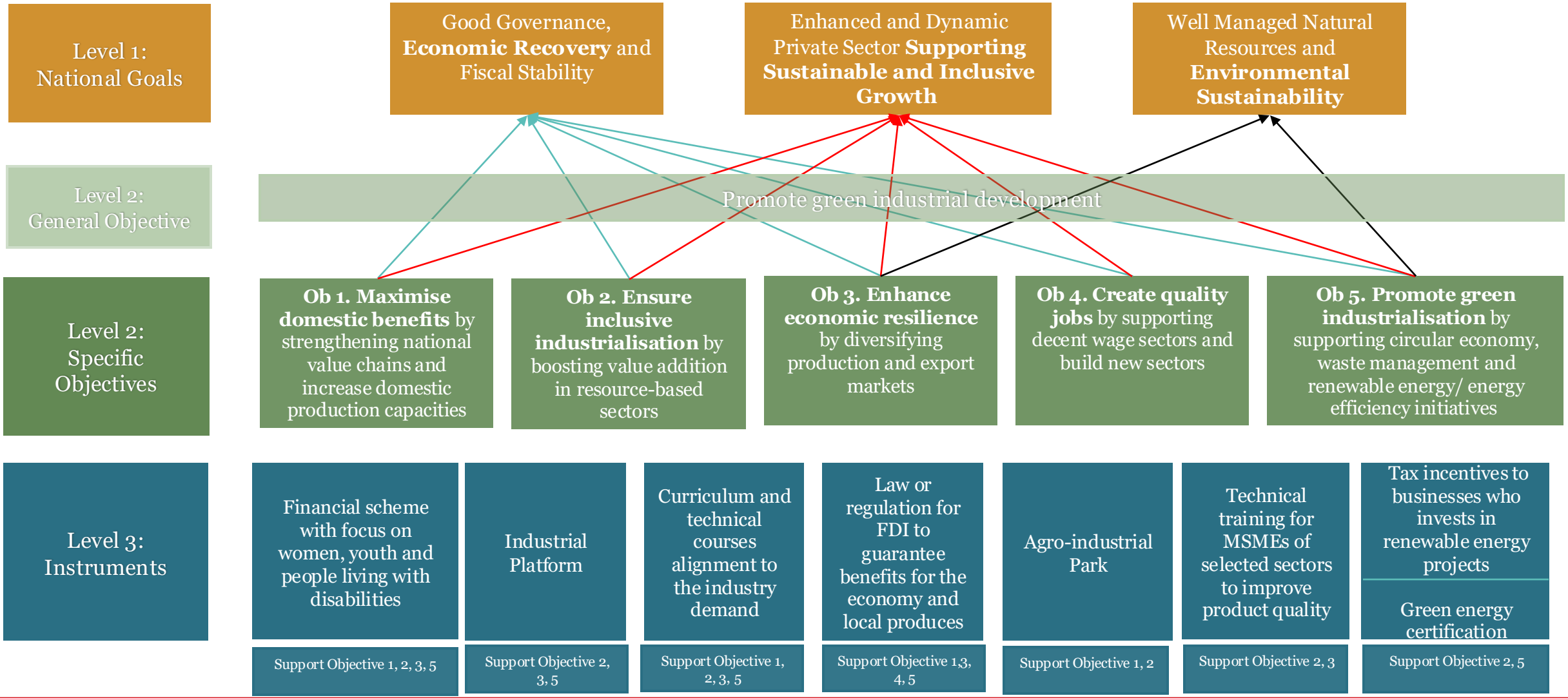
- shift to more sophisticated sectors and value-added products
- generate quality employment
- reduce emissions

How will the local government intervene to support the achievement of regional objectives?

- Establish different types of instruments (e.g. regulations; incentives; information; public ownership)

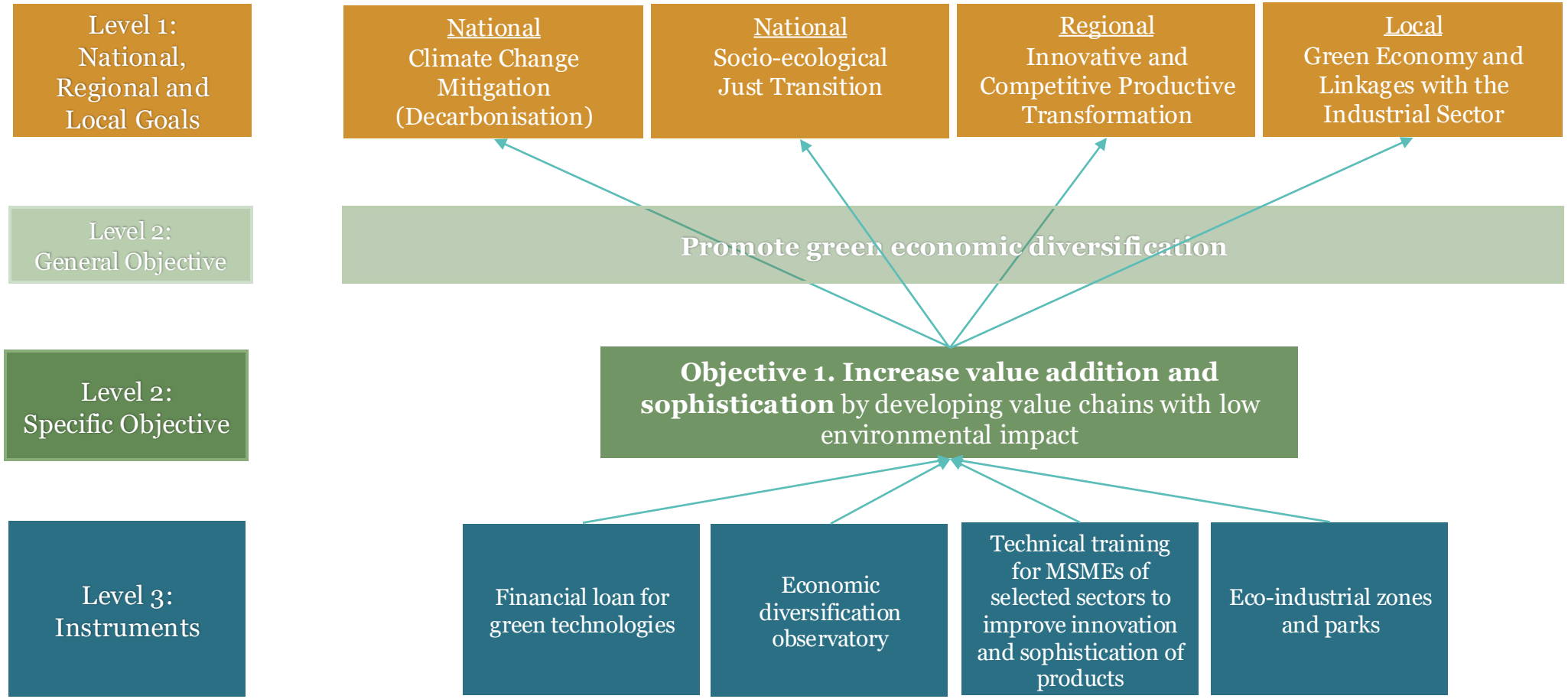
Note: Level 3 is developed in-depth in Chapter 5 as part of policy action planning

Case study: full goal-oriented intervention logic for the green industrial policy in Eswatini



Source: ICR-Facility Project to support the development of a Green Industrial Policy in Eswatini

Case study: goal-oriented intervention logic for economic diversification of Antofagasta (specifying only one objective)



Just Energy Transition in Coal Regions

CHAPTER 4

Identifying diversification opportunities

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

1.1 Just Transition & coal phase-out
1.2 Economic diversification as a key element to prepare for a Just Transition
1.3 Economic diversification strategy design to support Just Transition
1.4 Evidence-based approach for strategy design
1.5 Multi-level coordination and collaboration for effective strategy design
1.6 Ensuring participatory strategy design

2. Elaborating a diversification diagnostic

2.1 The analytical process to assess the degree of economic diversification in coal regions
2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications
2.3 Quantitative tools to assess the degree of economic diversification in coal regions

3. Defining objectives for economic diversification strategies

3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

6. Developing a Monitoring and Evaluation (M&E) framework

6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

Key messages

Main methods to identify diversification opportunities to phase-out coal: Quantitative and qualitative tools characteristics and resources required

Characteristics of quantitative tools

Sectoral Assessment and Prioritisation (SAP)
GPI tool

- Based on **country/regions production and export structure**
- Considers a **variety of criteria for prioritisation** (i.e. economic, social environmental & cross-cutting issues)
- Focus on **short-medium term opportunities on existing sectors**
- **Medium** analytical **complexity** and **high adjustability**

Diversifying Industries & Value Chains for Exports (DIVE)
UNIDO tool

- Based on **country/regions exports**
- Considers **export potential for identification of opportunities** and suggests additional trade criteria for prioritisation (i.e. sophistication gain, vulnerability, demand potential, demand growth)
- Distinguishes **short and longer-term new opportunities**
- **High adjustability** but **high** analytical **complexity**

Atlas of Economic Complexity
HKS tool

- Based on **global/country export data**
- Considers **export potentials** for a preliminary identification of economic opportunities (not other criteria)
- Strong focus on comparative advantages of countries. Distinguishes **short and longer-term new opportunities**
- Easy to use but limited adjustability

Characteristics of qualitative tools

Participatory Appraisal of Competitive Advantage (PACA)
GIZ tool

Based on:

- **secondary literature** review,
- intermediate **participatory processes** (i.e. workshops) to pre-define strategic sectors
- **primary information collection** through interviews and mini-workshops to learn more about the local economy and sectors
- **final participatory process** (i.e. workshop) to prepare a diagnostic of the local economy and develop short and medium-term projects relevant to the identified economic sub-sectors.

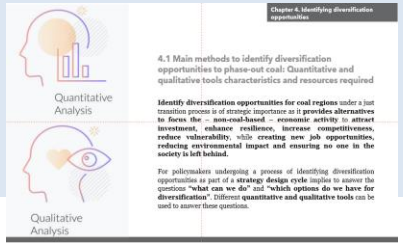
University of Indonesia methodology

Based on:

- **secondary literature** review (desk research)
- **primary information collection** through interviews to specify the goods and services that supported regions should consider in their diversification strategies
- **participatory processes** through focus groups discussions

- For **coal-based regions undergoing a just transition to phase out coal mines and/or coal power plants**, it is essential to **identify potential opportunities for economic diversification** to address two key questions: **"what can they do" and "which options do they have for diversification".**
- This process should adopt a **mixed-methods approach** that integrates **quantitative and qualitative tools**. By doing so, it ensures that results and decision-making are based on robust, objective information while also considering the interests, motivations, strengths, and challenges faced by the territories and local communities most affected by the transition.

For more information about resources required to implement the quantitative tools, refer to **Section 4.1**

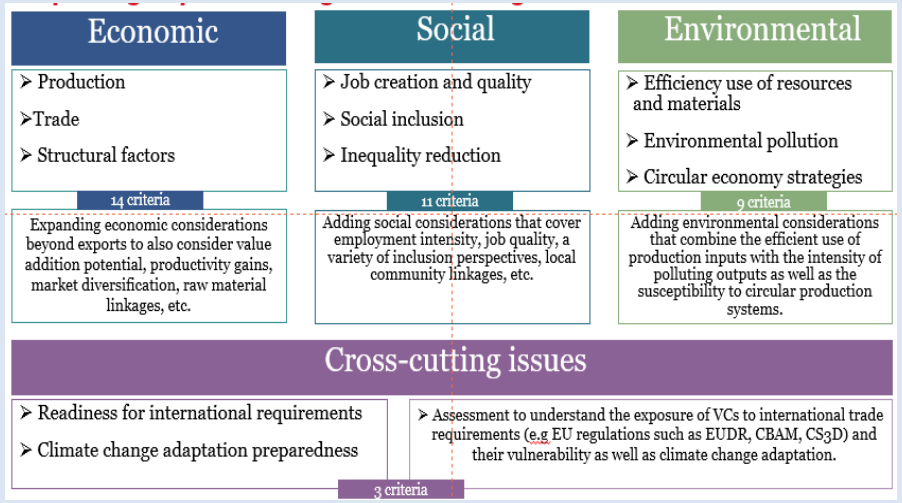


Key messages

Quantitative tools to identify diversification opportunities: SAP, DIVE, and the Atlas of Complexity methodologies

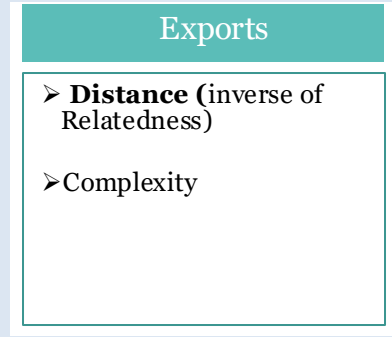
As part of the **quantitative tools** this Chapter shares three main methodologies that uses different criteria for the assessment:

SAP (GPI tool)

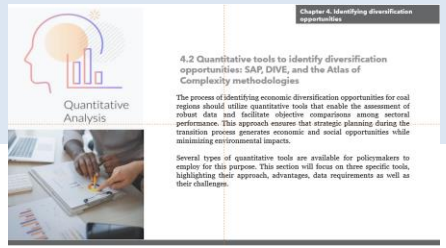


DIVE (UNIDO tool)

ATLAS OF COMPLEXITY (HKS tool)



For more information on the methodology of each tool and case studies, refer to **Section 4.2.**



Content of Chapter 4

4.1. **Main methods to identify diversification opportunities to phase-out coal:** Quantitative and qualitative tools characteristics and resources required

4.2. **Quantitative tools to identify diversification opportunities:** SAP, DIVE, and the Atlas of Complexity methodologies

4.3. **Qualitative tools to identify diversification opportunities:** PACA and DMUI methodologies

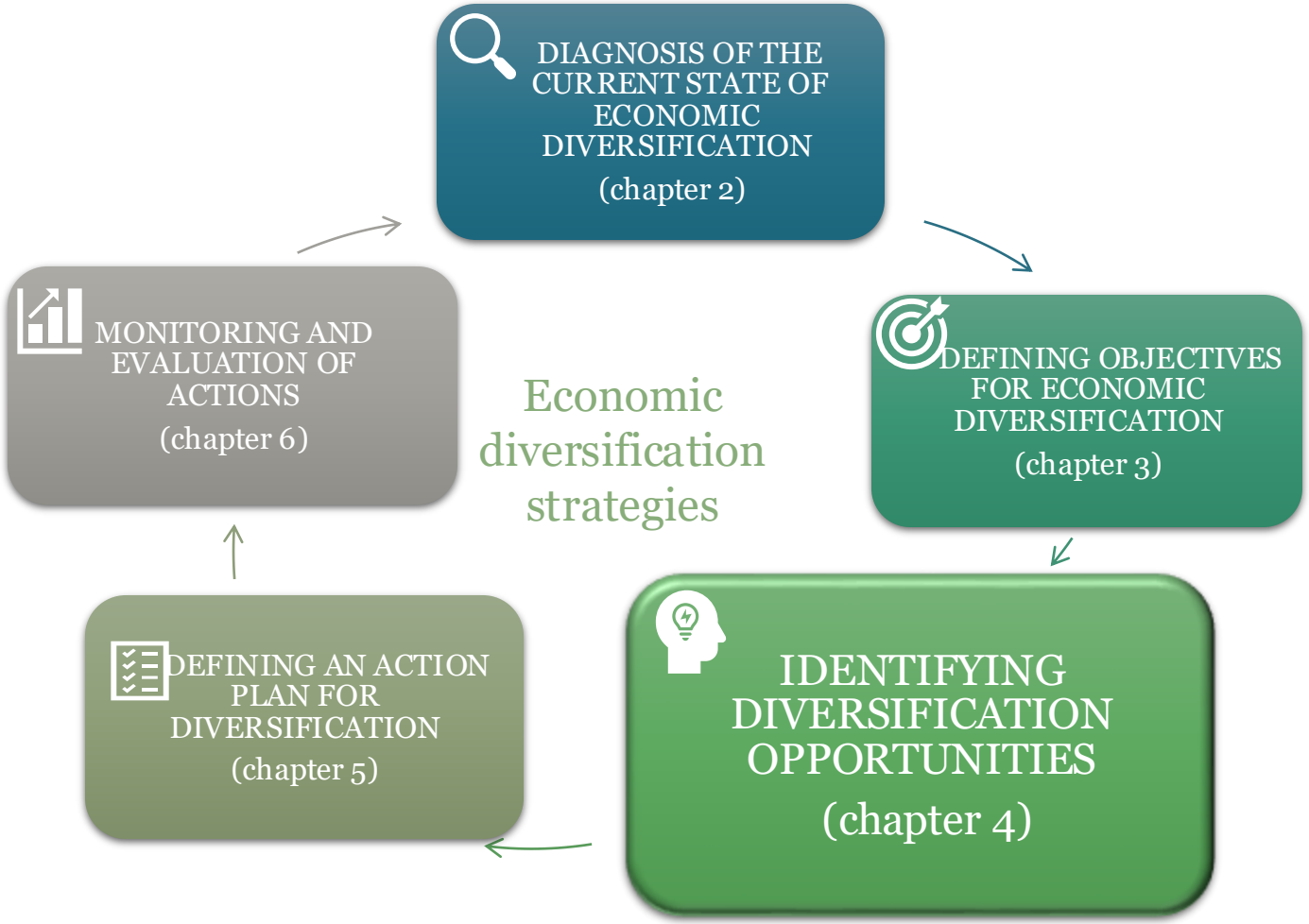
4.1 Main methods to identify diversification opportunities to phase-out coal: Quantitative and qualitative tools characteristics and resources required

Identifying diversification opportunities for coal regions under a just transition process is of strategic importance as it **provides alternatives to focus the – non-coal-based – economic activities. The identification of diversification opportunities gives orientation to develop economic potentials,** to **attract investment, enhance resilience, increase competitiveness, reduce vulnerability**, while **creating new job opportunities, reducing environmental impact and ensuring no one in the society is left behind.**

For policymakers undergoing a process of identifying diversification opportunities as part of a **strategy design cycle** implies to answer the questions **"what can we do"** and **"which options do we have for diversification"**. Different **quantitative and qualitative tools** can be used to answer these questions.

Identifying diversification opportunities in the strategy design cycle

- **Identifying diversification opportunities** is a critical component of the strategy design cycle, as it shows **pathways the economy** can take **both in the short and long run to phase-out coal** based on sectors and products with an interesting potential



Main characteristic of three quantitative tools to identify diversification opportunities

Characteristics	1. Sectoral Assessment and Prioritisation (SAP) **GPI tool**	2. Diversifying Industries & Value Chains for Exports (DIVE) **UNIDO tool**	3. Atlas of Economic Complexity **HKS tool**
	• Based on **country/regions production (consider internal economic development) and export structure;** • Considers a **variety of criteria for prioritisation** (i.e. economic, social environmental & cross-cutting issues) • Focus on **short-medium term opportunities on existing sectors** • **Medium** analytical **complexity** and **high adjustability**	• Based on **country/regions exports** • Considers **export potential for identification of opportunities** and suggests additional trade criteria for prioritisation (i.e. sophistication gain, vulnerability, demand potential, demand growth) • Distinguishes **short and longer-term new opportunities** • **High adjustability** but **high** analytical **complexity**	• Based on **global/country export data** • Considers **export potentials and complexity** for a preliminary identification of economic opportunities (not other criteria) • Strong focus on comparative advantages of countries. Distinguishes **short and longer-term new opportunities** • Easy to use but limited adjustability

Note: A detailed explanation about these tools is presented in section 4.2.

Main resources required to apply the quantitative tools to identify diversification opportunities

Resources \ Tools	1. Sectoral Assessment and Prioritisation (SAP) GPI tool	2. Diversifying Industries & Value Chains for Exports (DIVE) UNIDO tool	3. Atlas of Economic Complexity HKS tool
1. Expertise	– Large databases management – Professional background in economics and intermediate skills to create indicators in excel	– Large databases management – Professional background in economics and strong econometrics skills	– Professional background in economics – Internet navigation skills to access the automatised platform on the website
2. Time	2 weeks for calculations, graphs and a brief analysis (without data collection)	3-4 weeks for calculations, graphs and a brief analysis (without data collection)	2-3 days for a brief analysis (everything is already systematised, including graphs)

Note: GPI tool and UNIDO tool can have a regional application and could be used depending on data and skills availability

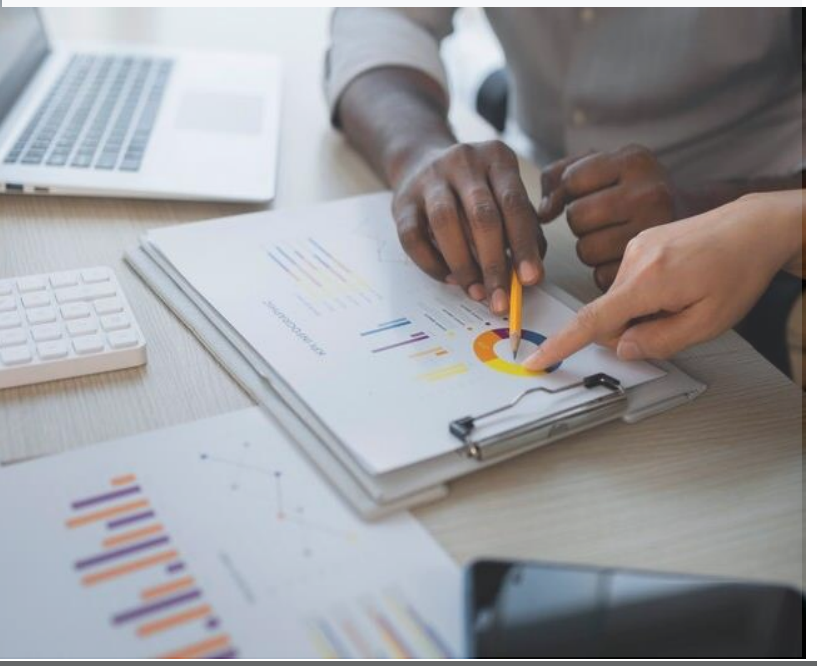
Two qualitative tools to identify diversification opportunities

Characteristics	4. Participatory Appraisal of Competitive Advantage (PACA) **GIZ tool**	5. University of Indonesia methodology
	Based on: • **secondary literature** review, • intermediate **participatory processes** (i.e. workshops) to pre-define strategic sectors • **primary information collection** through interviews and mini-workshops to learn more about the local economy and sectors • final **participatory process** (i.e. workshop) to prepare a diagnostic of the local economy and develop short and medium-term projects relevant to the identified economic sub-sectors.	Based on: • **secondary literature** review (desk research) • **primary information collection** through interviews to specify the goods and services that supported regions should consider in their diversification strategies • **participatory processes** through focus groups discussions

Note: A more detailed explanation about these tools is presented in section 4.3.

Main resources required to apply the qualitative tools to identify diversification opportunities

Resources \ Tools	4. Participatory Appraisal of Competitive Advantage (PACA) GIZ tool	5. University of Indonesia methodology
1. Expertise	- Professional background in economics, public policy or related fields - Workshops facilitation skills	- Professional background in economics, public policy or related fields - Workshops facilitation skills
2. Time	3 weeks	3-4 weeks



4.2 Quantitative tools to identify diversification opportunities: SAP, DIVE, and the Atlas of Complexity methodologies

The process of identifying economic diversification opportunities for coal regions should utilise quantitative tools that enable the assessment of robust data and facilitate objective comparisons among sectoral performance. This approach ensures that strategic planning during the transition process generates economic and social opportunities while minimising environmental impacts.

Several types of quantitative tools are available for policymakers to employ for this purpose. This section will focus on three specific tools, highlighting their approach, advantages, data requirements as well as their challenges.

1. GPI tool: SAP

"Sectoral Assessment & Prioritisation"

(using East Kalimantan, Indonesia case study)

1. GPI tool - Sectoral Assessment and Prioritisation (SAP)

Approach. **The Sectoral Assessment and Prioritisation (SAP)**, supports policymakers in countries that are undergoing structural change processes to **analyse the performance of existing sectors and select the ones with the highest potential based on regional priorities for the diversification process.** These constitute opportunities that can be **supported on a short and medium term.**

Advantages of the tool. This tool enables **regions** to **establish assessment criteria** aligned with their specific **priorities** across four dimensions: **economic, social, environmental, and cross-cutting issues** (see next slide). This flexibility makes the **method highly adjustable**, considering data availability as well.

Data requirements. It depends on criteria selected by regions. However, **fundamental information** includes the **region's production and export structure**, as the approach focuses on identifying **diversification opportunities within existing sectors**.

Challenges. Lack of **data availability at the regional level** may **restrict the selection of criteria** for the assessment process. Nonetheless, it remains a **valuable resource for providing guidance and developing policy recommendations for the diversification process.** An example of its application in East Kalimantan, Indonesia, is presented in the following slides and will illustrate how the method was adapted to address these limitations.

Combining sectoral assessment criteria in a holistic approach
(depending on priorities a region selects among the 37 assessment criteria)

Economic

- Production
- Trade
- Structural factors

14 criteria

Expanding economic considerations beyond exports to also consider value addition potential, productivity gains, market diversification, raw material linkages, etc.

Social

- Job creation and quality
- Social inclusion
- Inequality reduction

11 criteria

Adding social considerations that cover employment intensity, job quality, a variety of inclusion perspectives, local community linkages, etc.

Environmental

- Efficiency use of resources and materials
- Environmental pollution
- Circular economy strategies

9 criteria

Adding environmental considerations that combine the efficient use of production inputs with the intensity of polluting outputs as well as the susceptibility to circular production systems.

Cross-cutting issues

- Readiness for international requirements
- Climate change adaptation preparedness

3 criteria

- Assessment to understand the exposure of VCs to international trade requirements (e.g. EU regulations such as EUDR, CBAM, CS3D) and their vulnerability as well as climate change adaptation.

For the assessment criteria and related indicators, refer to Annex 1

General steps to identify diversification opportunities

Step 1: Identification of regional data availability

Ideally at least use:

- Value added, exports, imports and employment by sector (ISIC 4 digit)*.
- Exports, imports by products (HS 6 digit)*.
- Total employment, female employment and wages by sector (ISIC 4 digit).
- CO2 emissions by sector (ISIC 4 digit).

Step 2: Selection of assessment criteria/indicators/weights

- Define dimensions to be analysed among economic, social, environmental, and cross cutting issues.
- Identify criteria and indicators to use among the 37 options.
- Determine weights to be applied in the index: (equal weight assumes equal relevance criteria).
- Sectoral assessment calculations.

Step 3: Sectoral assessment

- Use the selected criteria and indicators to evaluate sectoral performance (use the analytical device provided in the next slide)

Step 4: Standardisation of indicators**

- Align data under the same classification (i.e. ISIC Revision 4 at 4 digit (use concordance tables if needed).
- Standardise indicators representing each criteria if best performing sectors will be identified using a composite index.

Step 5: Identify best performing sectors

- Calculate a composite index using selected criteria and rank the best performing sectors.

Or

- Identify the best-performing sectors by examining which ones meet the most criteria.

Step 6: Decomposition and product level analysis for best performing sectors

- Decompose the analysis of best performing sectors and identify top 5-10 export/import products by value and positive growth rate according to HS 6 digit.

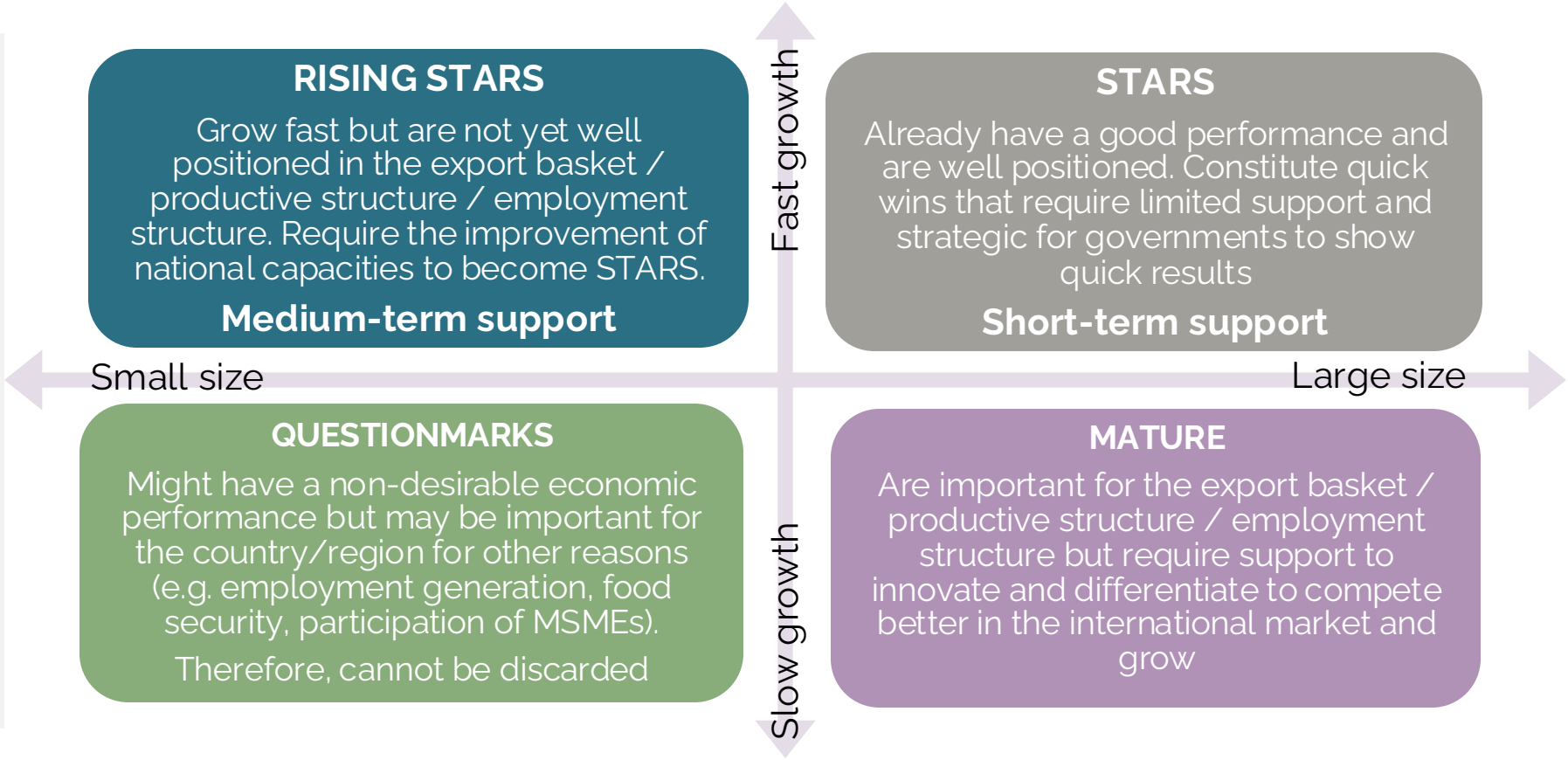
Note: * For an explanation of ISIC and HS classifications, please refer to Chapter 2, Section 2.1.

** Indicators have different units (%, USD) and need to be standardise to allow consistency in the calculation of an index and put them in a range between 0 and 1.

Analytical device that could be used in step 3 to conduct sectoral assessments considering the size and dynamism (growth rate): 4 groups

As part of the sectoral **assessment process**, regions will have to analyse **which combination of sectors** could suit better the **objectives of the diversification process,** as they have different policy implications to support them.

The following slides highlight **STAR sectors that are "quick wins"**



Note: Vertical axe captures sectoral dynamism (growth rate)=(((Exp value 2023/Exp value 2013))^(1/# years under analysis-1)))-1
Horizontal axe captures size, the importance of the sector in the economy, in the export basket or for employment generation

Case study. East Kalimantan (Indonesia)

The following slides share a **case study of East Kalimantan that uses the GPI tool for the analysis. East Kalimantan** is one of **Indonesia's richest provinces, with an economy dominated by coal, oil, and gas — where coal alone makes up a large share of its GDP and exports.** East Kalimantan is also set to host Indonesia's new capital city, *Nusantara*, which is intended to diversify the economic activity beyond extractives.

Indonesia is the world's largest coal exporter, and East Kalimantan is central to that role. However, the **government has committed to net-zero emissions by 2060** and, under the *Just Energy Transition Partnership (JETP)*, **plans to phase-out coal for domestic power generation by 2050.** Implementation is still gradual, with exports expected to continue longer, creating transition **challenges for coal-dependent regions like East Kalimantan**. To **mitigate** this, **efforts to diversify the economy towards other sectors and expand renewable energy, are crucial.**

GPI tool was applied to identify alternative economic opportunities for East Kalimantan. Despite limited data availability posing a major challenge during the analysis, the tool's flexibility enabled the generation of meaningful insights. The case study starts illustrating how these data challenges were addressed.

Case study. East Kalimantan (Indonesia)
Step 1: Data availability and dealing with challenges

Ideal data availability

- Regional data on a variety of performance dimensions (e.g. value added, employment, wages, export, import, emissions)
- Highly disaggregated data (e.g. ISIC 4 digit or HS 6 digit)
- However, data availability for Indonesian regions is very limited, only value added was available. Additional data generation efforts would be recommendable

Approaches to fill data gaps pragmatically

- Make use of national level data when regional data is not available
- Make use of disaggregated trade data if production data is very aggregated
- Consult expert´s opinions when using national data to ensure all potential opportunities for the region are realistic

The solution for East Kalimantan analysis

In the absence of complete regional data, the following was used:

- Regional data for value added (ISIC 2-digit)
- National data for employment, export and import (ISIC 2-digit) to allow multi-dimensional assessment and calculation of a composite index
- National export and import data on ISIC 4-digit level and HS 6-digit level to allow the identification of for more disaggregated results for diversification opportunities

Note: For an explanation about these two international classifications, refer to: Chapter 2 - Slide

Case study. East Kalimantan (Indonesia)

Step 2: Selected criteria/weights and key analytical questions

Based on the explained methodology and data limitations for East Kalimantan, the criteria that can be analysed, weights and the analytical questions are explained below.

1. Value added performance (0.25)

- Which sectors are currently driving the regional economy?

2. Employment impact analysis (0.25)

- What is the employment impact of key sectors?

3. Export potentials analysis (0.25)

- What are future opportunities for EK to produce goods that other Indonesian regions already successfully export?

4. Import substitution potentials analysis (0.25)

- What are future opportunities for EK to produce for domestic market?

The assessment criteria (value added performance, employment impact analysis, export potentials analysis, import potentials analysis) will consider the analytical device mentioned as part of Step 3.

Case study. East Kalimantan (Indonesia)
How to read the results in the next slides

- **The scatter plot graphs allow to conduct a sectoral assessment** (step 3) and understand how the different sectors are performing in terms of size (export value) and dynamism (growth rate) and classify them into four different groups (stars, rising stars, mature and question mark). **Based on this and considering data availability**, the following analysis was conducted:

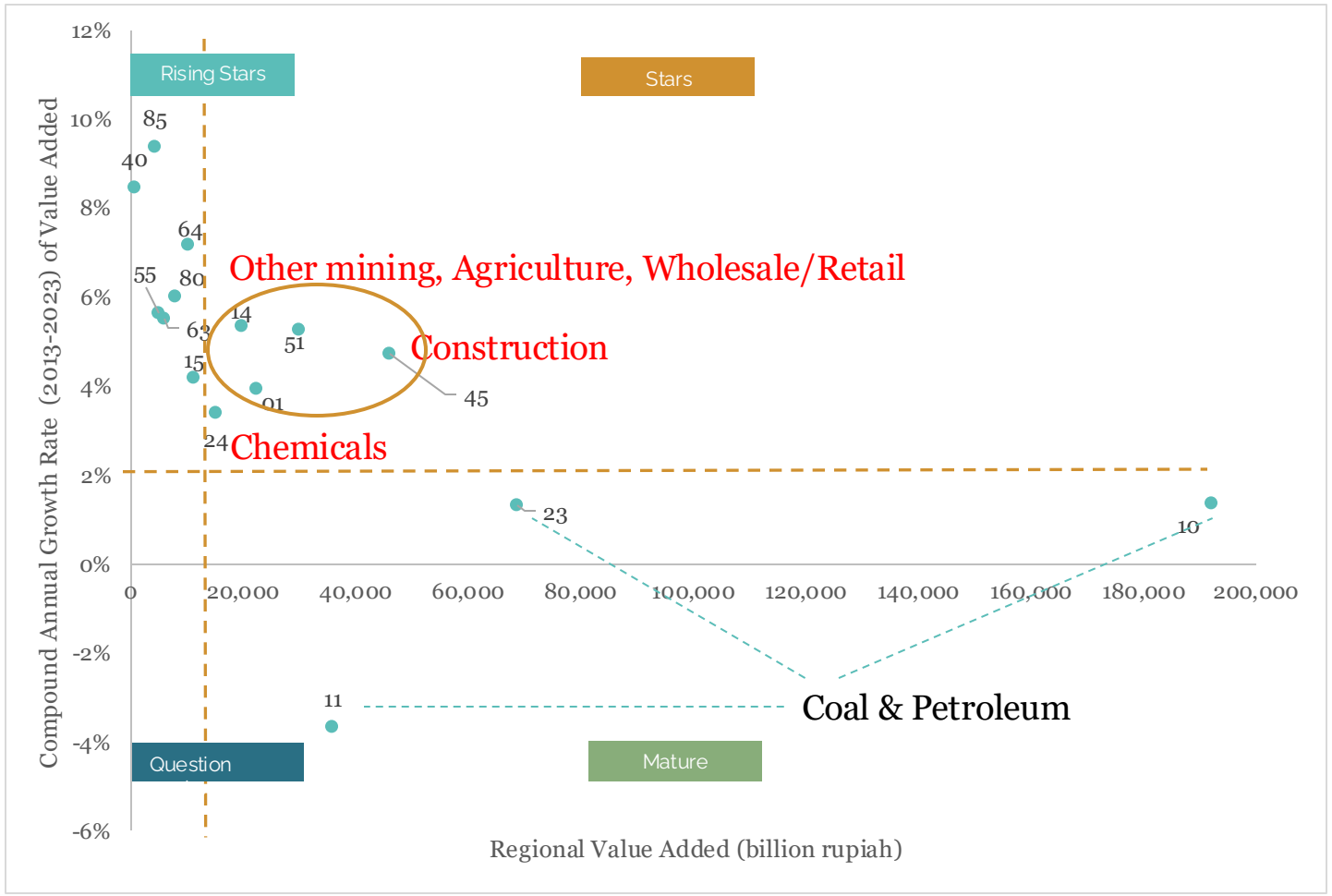
Analysis of:

- **Regional value added.** Identify which other sectors (apart from coal and petroleum) have good potential in East Kalimantan in terms of size and growth.
- **National Employment**. Determine which sectors have potential for employment generation in Indonesia and are existing sectors in East Kalimantan production (even though they are not yet strongly developed) allows to infer that if potentiated could also be a good source of employment creation.
- **National Exports.** Determine which sectors are important for Indonesian exports but are not yet strongly represented in East Kalimantan production also allows to infer that if potentiated could be a good source of foreign income generation and diversification.
- **National Imports.** Determine which sectors could be strategic for Indonesia´s import substitution and are existing sectors in East Kalimantan production but not yet strongly represented, allows to infer that if potentiated could also be an alternative for import substitution.

Case study. East Kalimantan (Indonesia)

Step3: Value added performance

Best performing sectors are Construction, Other mining, Agriculture, Wholesale/Retail, and Chemicals



Code ISIC Rev 3	Activity Description
01	**Agriculture, Livestock, Hunting and Agriculture Services**
10	Mining of Coal and Lignite
11	Extraction of Crude Petroleum, Natural Gas, and Geothermal
14	**Other Mining and Quarrying**
15	Manufacture of Food Product and Beverages
23	Manufacture of Coal and Refined Petroleum Products
24	**Manufacture of Chemicals and Pharmaceuticals and Botanical Products**
40	Electricity, gas and hot water supply
45	**Construction**
51	**Wholesale Trade and Retail Trade Except of Motor Vehicles and Motorcycles**
55	Hotels and restaurants
63	Warehousing and Support Services for Transportation, Postal and Courier
64	Information and Communication
80	Education
85	Human Health and Social Work Activities

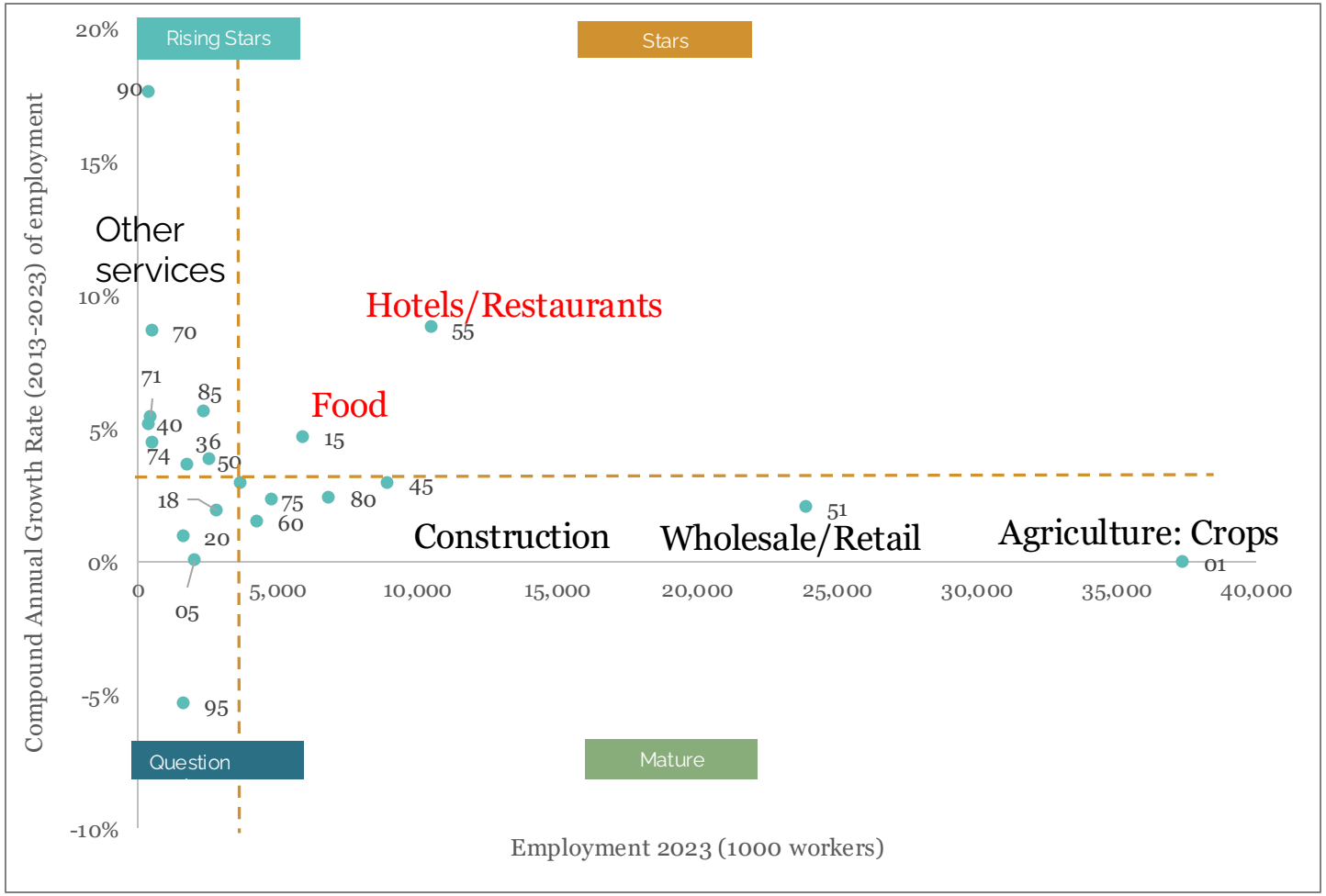
Coal and petroleum products appear as important sectors for value addition, but we do not consider them as the main objective is to phase-out coal

Note: Plotted sectors include 10 top in terms of share and 5 top in terms of growth
Source: National Statistics

Case study. East Kalimantan (Indonesia)

Step3: Employment impact

Employment generation in Indonesia mainly driven by agriculture and wholesale & retail trade, but tourism & food sectors have interesting potential and are also present in East Kalimantan production



Code ISIC Rev 3	Activity Description
01	Crop and animal production, hunting, and related service activities
05	Fishing and aquaculture
15	Manufacture of food and beverages
18	Manufacture of wearing apparel
20	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
36	Manufacture of furniture and other manufacturing
40	Electricity, gas, steam, and air conditioning supply
45	Construction
50	Wholesale and retail trade and repair of motor vehicles and motorcycles
51	Wholesale trade, except of motor vehicles and motorcycles
55	Hotel and restaurants
60	Land transport and transport via pipelines
70	Real estate activities
71	Rental and leasing activities
74	Other business activities
75	Public administration and defence; compulsory social security
80	Education
85	Health and social work
90	Sewage and refusal disposal, sanitation and similar activities
95	Activities of households as employers of domestic personnel

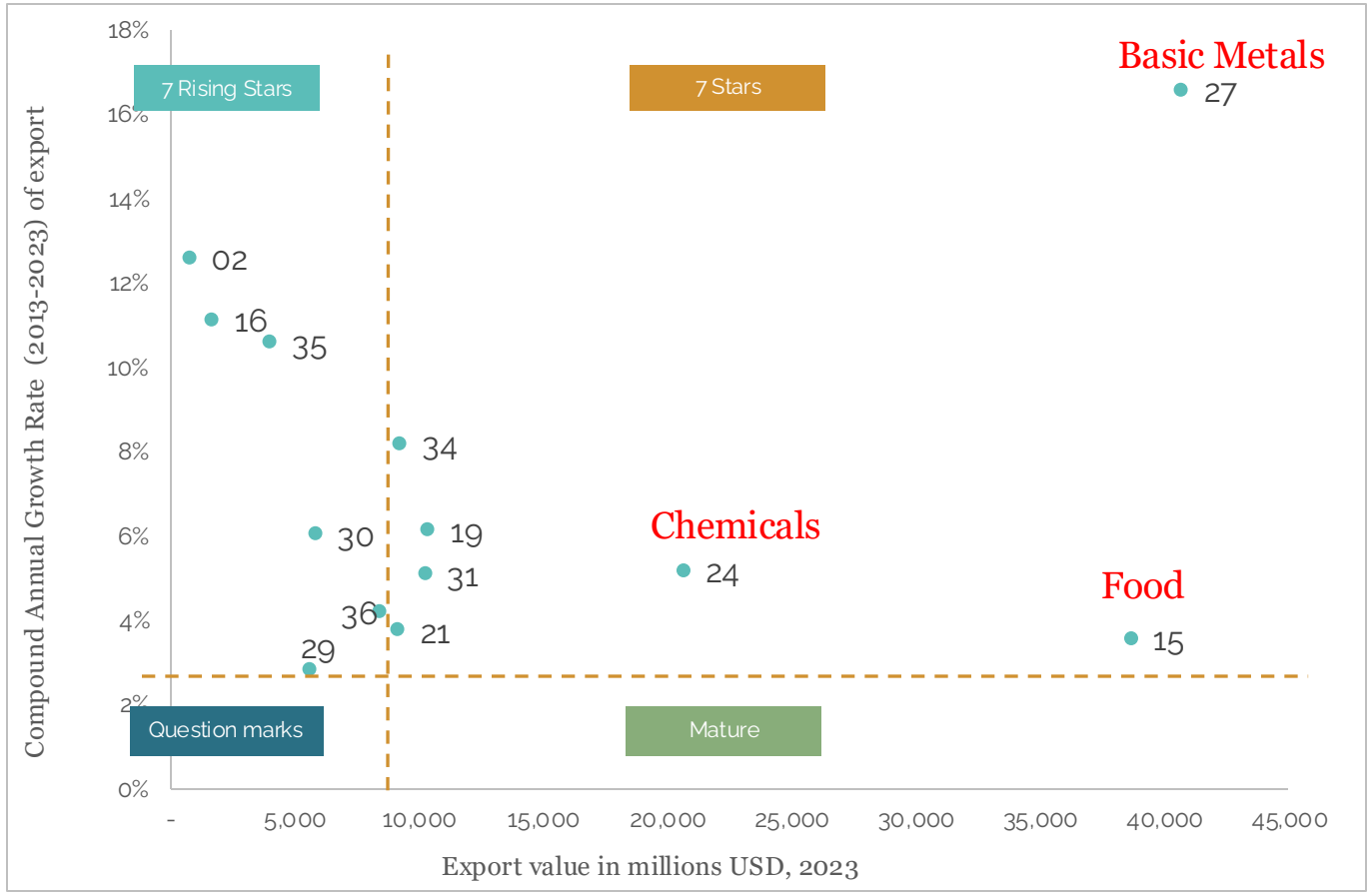
Note: Plotted sectors include 15 top in terms of share and 5 top in terms of growth. Also involve a cut-off point of 300,000 that represented 96% of the total employment

Source: ILO

Case study. East Kalimantan (Indonesia)

Step3: Exports potential analysis

Sectors that are important for Indonesian exports but not yet strongly represented in East Kalimantan production: Food, Chemicals and Basic Metals



ISIC CODE	7 STARS
15	Manufacture of Food Products and Beverages
19	Tanning and Dressing of Leather; Manufacture of Luggage, Handbags and Footwear
21	Manufacture of Paper and Paper Products
24	Manufacture of Chemicals and Chemical Products
27	Manufacture of Basic Metals
31	Manufacture of Electrical Machinery and Apparatus n.e.c.
34	Manufacture of Motor Vehicles, Trailers and Semi-Trailers

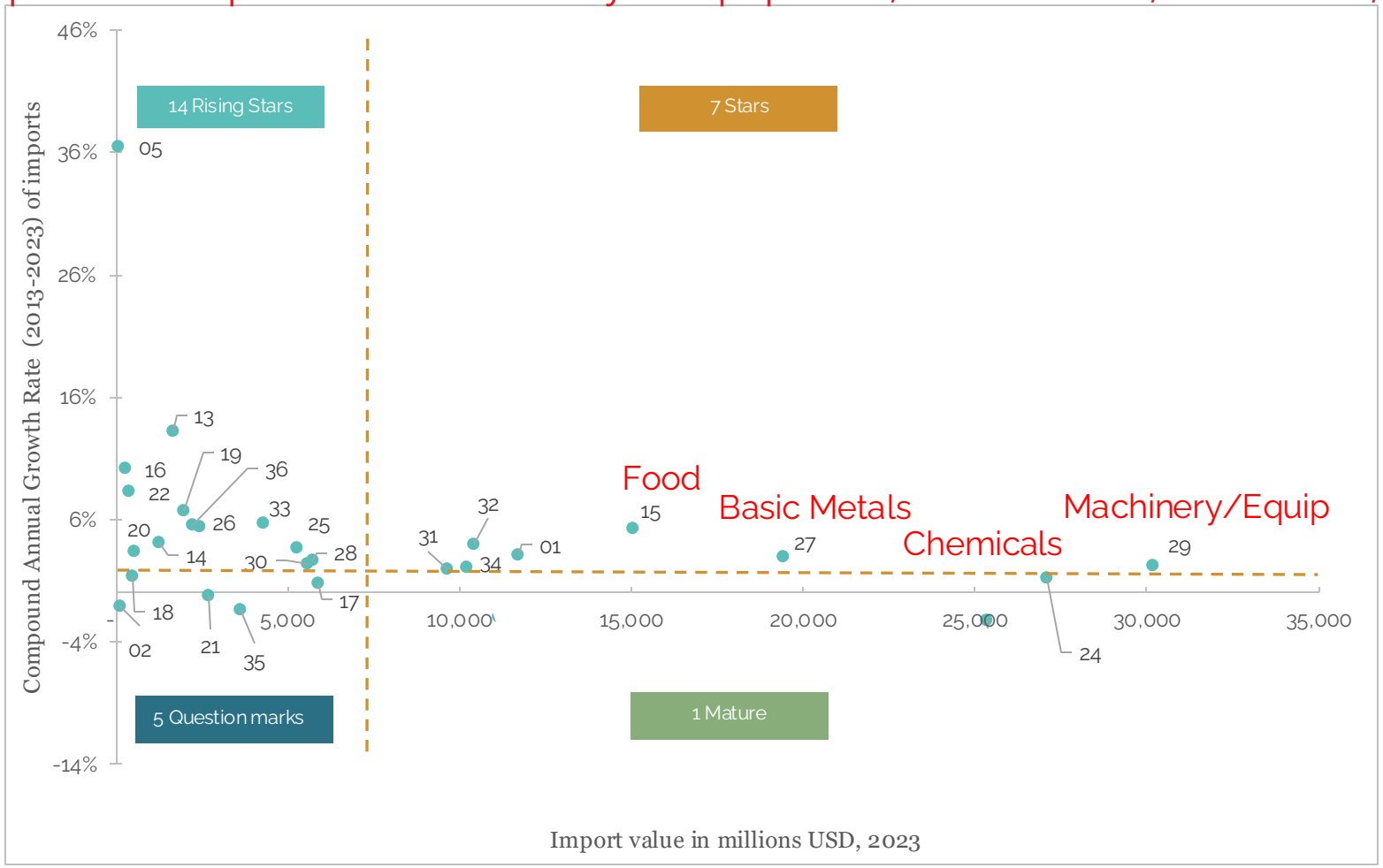
ISIC CODE	7 RISING STARS
02	Forestry, Logging and Related Services
12	Mining of Uranium and Thorium Ores
16	Manufacture of Tobacco Products
29	Manufacture of Machinery and Equipment n.e.c.
30	Manufacture of Office, Accounting and Computing Machinery
35	Manufacture of Other Transport Equipment
36	Manufacture of Furniture; Manufacturing n.e.c.

Note: The graph do not show subsector 12 Mining of Uranium and Thorium Ores to due graphical distortions (3 USD million ; 52% rising star)
Source: UN-COMTRADE through WITS

Case study. East Kalimantan (Indonesia)

Step 3: Import substitution potential analysis

Sectors with opportunities for import substitution at a national level that the region could explore if there is productive potential: Machinery & Equipment, Basic Metals, Chemicals, Food



CODE	7 STARS
01	Agriculture, Hunting and Related Services
15	Manufacture of Food Products and Beverages
27	Manufacture of Basic Metals
29	Manufacture of Machinery and Equipment n.e.c.
31	Manufacture of Electrical Machinery and Apparatus n.e.c.
32	Manufacture of Radio, Television & Communication Equipment & Appara
34	Manufacture of Motor Vehicles, Trailers and Semi-Trailers

CODE	1 MATURE
24	Manufacture of Chemicals and Chemical Products

CODE	15 RISING STARS
05	Fishing, Operation of Fish Hatcheries and Fish Farms
13	Mining of Metal Ores
14	Other Mining and Quarrying
16	Manufacture of Tobacco Products
19	Tanning and Dressing of Leather; Manufacture of Luggage, Handbags, and Footwear
20	Manufacture of Wood and of Products of Wood and Cork, Except Furniture; Manufacture of Articles of Straw and Plaiting Materials
22	Publishing, Printing and Reproduction of Recorded Media
25	Manufacture of Rubber and Plastics Products
26	Manufacture of Other Non-Metallic Mineral Products
28	Manufacture of Fabricated Metal Products, Except Machinery and Equipment
30	Manufacture of Office, Accounting and Computing Machinery
33	Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks
36	Manufacture of Furniture; Manufacturing n.e.c.
40	Electricity, Gas, Steam and Hot Water Supply

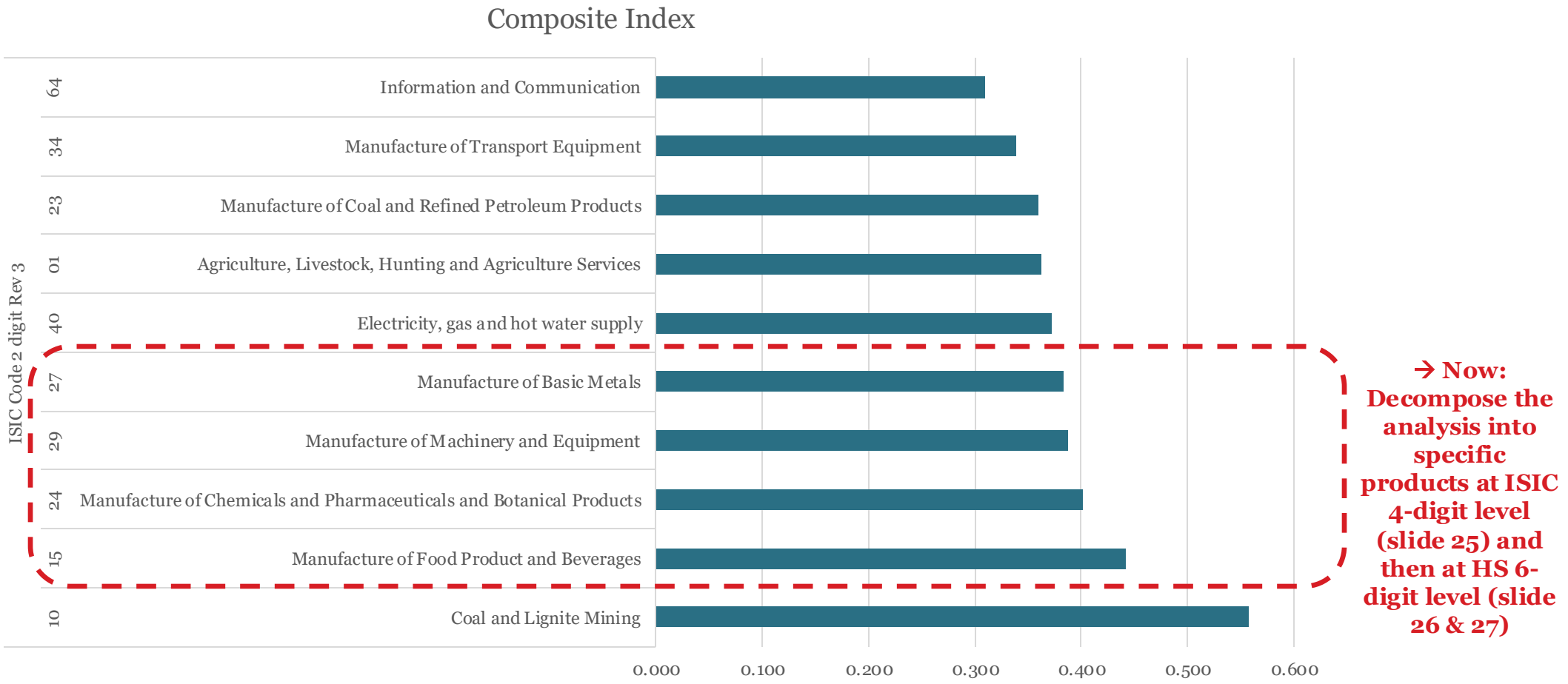
CODE	5 QUESTIONMARKS
02	Forestry, Logging and Related Services
17	Manufacture of Textiles
18	Manufacture of Wearing Apparel; Dressing and Dyeing of Fur
21	Manufacture of Paper and Paper Products
35	Manufacture of Other Transport Equipment

Note: The graph do not show subsector 40 Electricity, Gas, Steam and Hot Water Supply due to graphical distortions (61 USD million ; 70%, rising star)
Source: UN-COMTRADE through WITS

Case study. East Kalimantan (Indonesia)

Step 4 and Step 5: Top 10 subsectors that best meet the 8 criteria (size and dynamism for value added, employment, exports and imports)

The closest to 1 show subsectors that best meet the assessment criteria



→ Now: Decompose the analysis into specific products at ISIC 4-digit level (slide 25) and then at HS 6-digit level (slide 26 & 27)

Note: Disregard Coal and Lignite Mining and Manufacture as the purpose of the diversification process is to phase-out coal. However, it appears because is a current strategic sector for value added

Case study. East Kalimantan (Indonesia)

Alternative for Step 5: Summary results of sectors that best perform in the different criteria (stars) and comply with several criteria

1. Value added performance

-14 Other mining,
-01 Agriculture,
-51 Wholesale/Retail
-45 Construction
-24 Chemicals

2.Employment impact analysis

-55 Services (including hotels and restaurants-tourism)
-15 Food

3. Export potentials analysis

-27 Basic Metals
-15 Food
-24 Chemicals

4. Import substitution potentials analysis

-29 Machinery/Equipment
-24 Chemicals
-27 Basic Metals
-15 Food

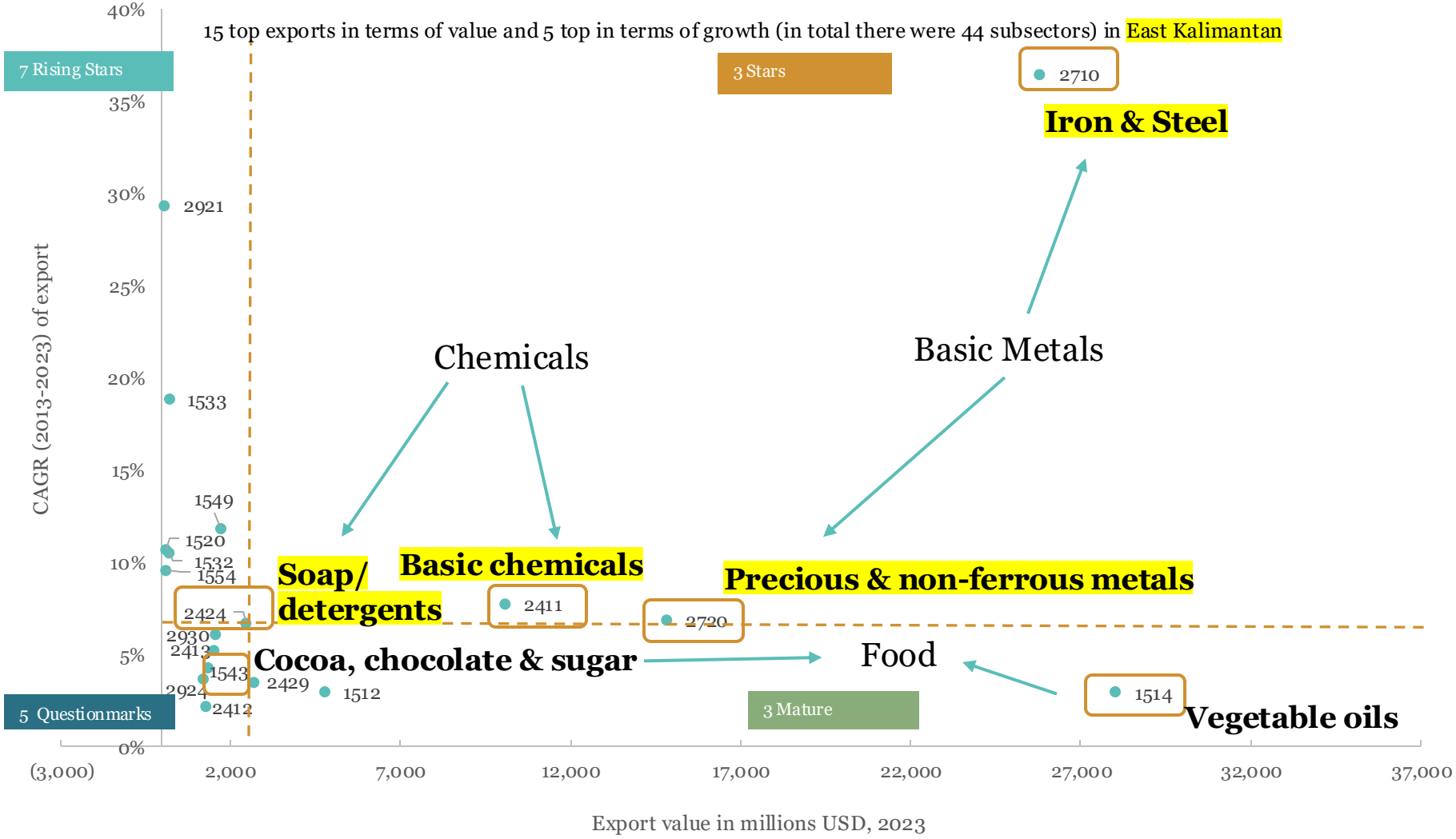
All these sectors could constitute a diversification opportunity, but the ones that repeats the most according to the 4 criteria are Chemicals, Food and Basic Metals

→ Now: Decompose the analysis into specific products at ISIC 4-digit level (slide 25) and then at HS 6-digit level (slide 26 & 27)

Case study. East Kalimantan (Indonesia)

Step 6. Decomposition analysis of best performing sectors by ISIC at 4 digit

Opportunities with export potential: Iron & Steel, Precious & non-ferrous metals, Basic Chemicals, Soap/detergents (size and growth)



CODE	3 STARS
2411	Manufacture of Basic Chemicals, Except Fertilisers and Nitrogen Compounds
2710	Manufacture of Basic Iron and Steel
2720	Manufacture of Basic Precious and Non-Ferrous Metals

CODE	3 MATURE
1512	Processing and Preserving of Fish and Fish Products
1514	Manufacture of Vegetable and Animal Oils and Fats
2429	Manufacture of Other Chemical Products n.e.c.

CODE	9 RISING STARS
1520	Manufacture of Dairy Products
1532	Manufacture of Starches and Starch Products
1533	Manufacture of Prepared Animal Feeds
1549	Manufacture of Other Food Products n.e.c.
1554	Manufacture of Soft Drinks; Production of Mineral Waters and Other Bottled Waters
2424	Manufacture of Soap and Detergents, Cleaning and Polishing Preparations
2921	Manufacture of Agricultural and Forestry Machinery

CODE	5 QUESTIONMARKS
1543	Manufacture of Cocoa, Chocolate and Sugar Confectionery
2413	Manufacture of Plastics in Primary Forms and of Synthetic Rubber
2919	Manufacture of Other General-Purpose Machinery n.e.c.
2924	Manufacture of Machinery for Mining, Quarrying and Construction
2930	Manufacture of Domestic Appliances n.e.c.

Note: Plotted exports consider a cut-off point of 10 USD millions

Source: UN-COMTRADE through WITS

Case study. East Kalimantan (Indonesia)

Step 6. Product analysis by HS at 6 digit

Example for ISIC code 2710. Manufacture of basic iron and steel: opportunities for ferro-nickel & stainless steel

Top 5 opportunities considering values and positives growth rates

HS Code	Product Description	Indonesia exports in 1000 USD		Share in Indonesia sector 2710	CAGR
		2013	2023	2023	2013-2023
720260	Ferro-nickel, in granular/powder form	204,286	14,772,507	57%	53%
721891	Stainless steel, of rectangular (excl. square) cross-section	27	1,924,916	7%	205%
721933	Flat-rolled products of stainless steel, of a width of 600mm/more, not further worked than cold-rolled (cold-reduced), of a thickness >1mm but <3mm	24,160	1,459,895	6%	51%
721913	Flat-rolled products of stainless steel, of a width of 600mm/more, not further worked than hot-rolled, in coils, of a thickness of 3mm/more but < 4.75mm	488	1,121,463	4%	117%
721899	Semi-finished products of stainless steel (excl. of 7218.91)	93	955,319	4%	152%

Note: To conduct product analysis use correspondence tables between ISIC Classification and HS Classification. For this go to https://wits.worldbank.org/product_concordance.html

Case study. East Kalimantan (Indonesia)

Step 6. Product analysis by HS at 6 digit

Example for ISIC code 2411. Manufacture of basic chemicals, except fertilisers and nitrogen compounds: opportunities for oleo-chemicals

Top 5 opportunities considering values and positives growth rates

HS Code	Product Description	Indonesia exports in 1000 USD		Share in Indonesia sector 2411	Compound Annual Growth Rate
		2013	2023	2023	2013-2023
382319	Industrial monocarboxylic fatty acids other than stearic acid/oleic acid/tall oil fatty acids; acid oils from refining	1,058,183	4,205,256	42%	15%
382370	Industrial fatty alcohols	489,992	1,281,710	13%	10%
382311	Stearic acid	392,513	633,932	6%	5%
291590	Saturated acyclic monocarboxylic acids & their anhydrides, halides, peroxides & peroxyacids; their halogenated/sulphonated/nitrated/nitrosated derivatives (excl. of 2915.11-2915.70)	63,927	386,504	4%	20%
440290	Wood charcoal (including shell/nut charcoal, excl. of 440210), whether/not agglomerated.	132,151	333,889	3%	10%

Note: To conduct product analysis use correspondence tables between ISIC Classification and HS Classification. For this go to https://wits.worldbank.org/product_concordance.html
To identify specific products within a subsector we use correspondence tables between ISIC (categorises sectors) and HS (categorises products) classifications, and by analysing the export value (or share) and the compound annual growth rate, we identify the top 5 opportunities. We only consider products with the highest export value and positive growth rates. For this example of sector 2411, oleo chemical products are opportunities for diversification

Case study. East Kalimantan (Indonesia)

Final analytical results of sectoral decomposition: attractive products with export potential (size and growth)

2411 Basic Chemicals	2424 Soap/detergents	2720 Basic precious & non-ferrous metals	2710. Basic Iron and steel
• Ole-chemicals • Fatty alcohols	• Glycerol • Soaps	• Aluminium oxide • Cathodes of refined copper	• Ferro-nickel • Semifinished products of stainless steel

Case study: Lessons learned from the application of the methodology in East Kalimantan (Indonesia)

- Ideally, this tool should rely on regional data to enable easier and more precise analysis. However, limited availability of regional economic, social, and environmental data is a common challenge across many countries. In the absence of such data, national-level information can still serve as a proxy to identify potential diversification opportunities. At a minimum, regional value-added or export data should be available to provide clarity on existing sectors in the region.

- The methodology is based on indicators that can be applied by technicians in public or private institutions without major complexity. Still, an economics background is necessary to interpret the results in a meaningful way.

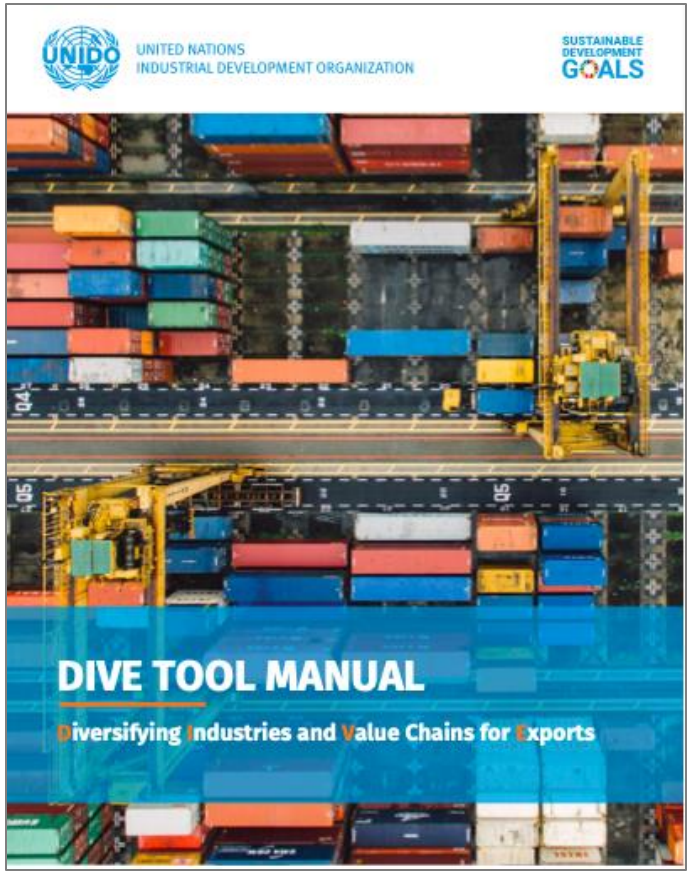
- These findings were presented in January 2025 at a Regional Consultation Forum in East Kalimantan to stimulate debate on potential diversification pathways to support the coal phase-out.

2. UNIDO tool: DIVE

"Diversifying Industries & Value Chains for Export"

(using Antofagasta, Chile case study)

2. UNIDO tool - Diversifying Industries & Value Chains for Exports (DIVE)



To access UNIDO DIVE, go to DIVE Tool Manual

Approach. **The Diversifying Industries & Value Chains for Exports (DIVE)** enables **regions** to identify **new products in existing or new sectors** that represent **feasible targets for diversification** based on the **degree of "relatedness".** This is measuring **"proximity" between products outside the export basket and those already exported with a Revealed Comparative Advantage (RCA)** (concept and calculation introduced in Chapter 2).

The tool supports **policymakers to design a diversification process** and helps to address a **key question about the direction an economy should take**: Is it **desirable to diversify exclusively into new products that depend on existing capabilities** and are linked to available resources (related products)? and /or is it **feasible to develop new specialisations in products that have little similarity with the country's existing production structure** (unrelated products)?

This implies that the methodology allows to identify:

- **Short jumps as 'low-hanging fruits' for diversification strategies:** Potential specialisation for which the region is likely to have the required production capabilities (i.e. already specialised in related products).
- **Long jumps are more disruptive and potentially growth-enhancing diversification strategies:** Potential specialisation that are unrelated to the regional current specialisation. Novel areas for longer-term diversification.

2. UNIDO tool - Diversifying Industries & Value Chains for Exports (DIVE)

Strength of the approach: a map that allows an identification of targets based on solid economic concepts (ex. relatedness / export potential) and rigorous empirical analysis validated by the research community ➔ Reduce complexity and explicitly considers 'feasibility' of some diversification patterns;

Limit of the approach: feasibility does not imply desirability of alternative diversification patterns. The prioritisation obtained using the **DIVE methodology can (and should)** be matched with additional priorities/criteria, for instance selecting **sectors/products that are instrumental for the green transition**

Advantages of the tool. DIVE **provides additional trade criteria that the region could use to prioritize**. Some of the criteria is sophistication gain, degree of competition, world demand growth, demand potential for a country's exports (these concepts will be explained more in detail in the following slides. In addition, the **advantage** in applying this tool is the **high adjustability** considering it could be used at a country or regional level if trade information is available.

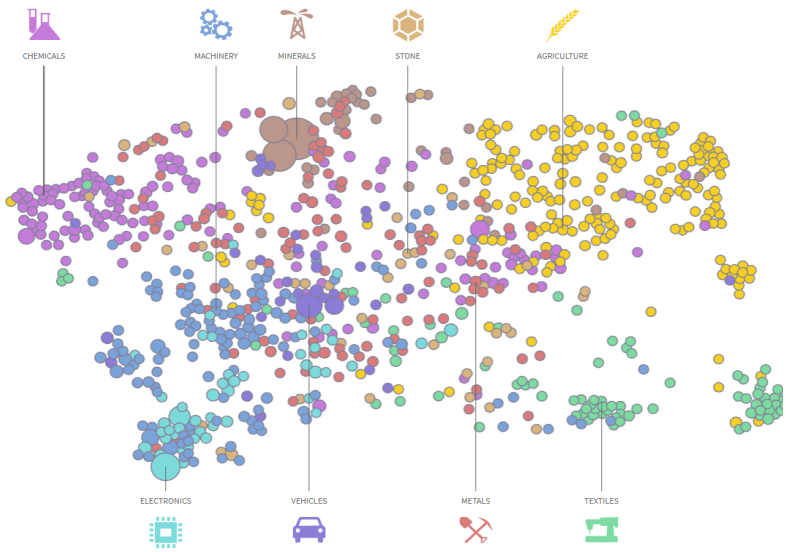
Data requirements. The **methodology considers only export data** using HS at 4 digit to calculate the degree of **relatedness** between products and identify a preliminary list of opportunities (short and long jumps). This allows to "clear the fog" and from more than 1200 potential targets identify 80-100 DIVE targets approximately.

Challenges. The tool has a **high analytical complexity** for some of the calculations. Nonetheless, it remains a **valuable resource for providing guidance and developing policy recommendations for the diversification process.** An example of its application in Antofagasta, Chile, is presented in the following slides.

To access UNIDO DIVE, go to **DIVE Tool Manual**

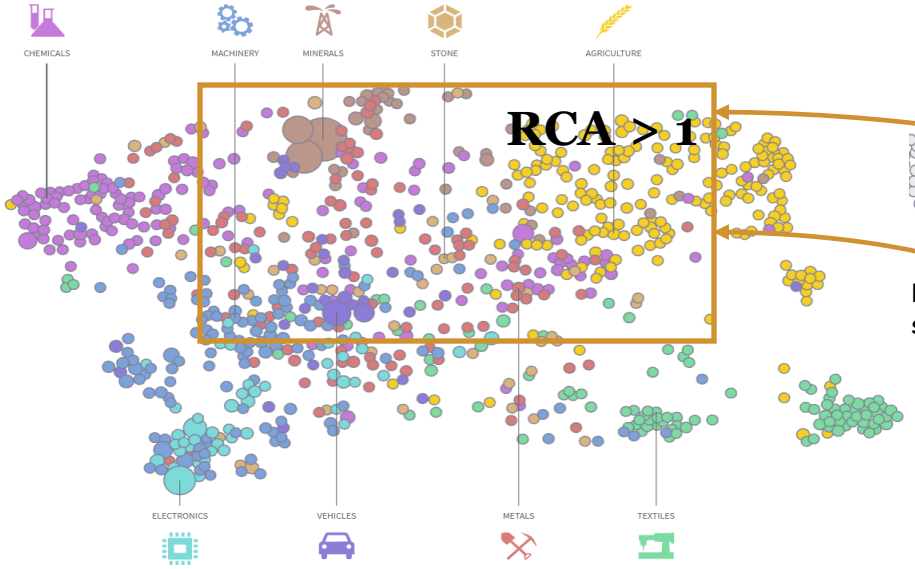
Potential targets for diversification could be products from the option set in which the economy has not currently or recently developed a comparative advantage. These products, might be not exported at all or exported but not with a relative specialisation

All exports from the region



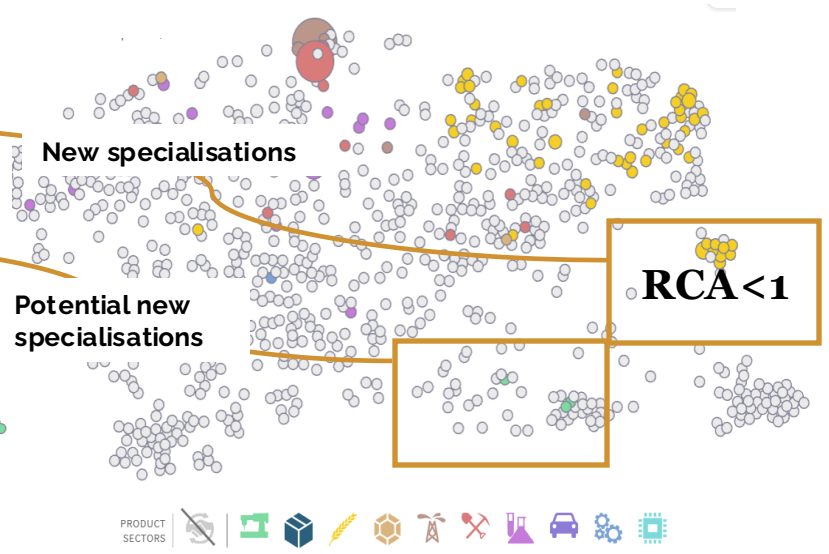
All exports are all products that the region exports in a specialised or non-specialised manner

Export basket of the region



Export basket contains products in which the **region shows relative specialisation** with respect to a *benchmark* (usually the world economy). This is products with an **RCA > 1 at least 2 years between t and t+2**

Export option set



The **option set** considers the set of **products in which a region has NOT currently or recently developed a comparative advantage,** and which **are NOT necessarily exported** by the region.

- **Colour points** shows region´s exports WITHOUT specialisation (products with RCA<1)
- **Grey points** shows products that the region DOES NOT export at all

DIVE supports the identification of future diversification options

The methodology allows to identify:

Short jumps: Products with **high degree of relatedness** with products in the current export basket and for which the region is likely to have the required capabilities. This could also be classified according the number of competitors (# of countries that export the product with RCA>1 in the world market. Examples are based on the case study of Antofagasta.

- With many competitors (DIVE 1)
- With few competitors (DIVE 2)

DIVE 1

1 Unrefined copper → Copper wire

Antofagasta already exports

DIVE 2

2 Fertilizers → Amino resins

Antofagasta already exports

DIVE supports the identification of future diversification options

The methodology allows to identify:

Long jumps: Products **with a low degree of relatedness** with products in the current export basket and for which the region does currently not have the required capabilities. However, based on the experiences of other countries, they can be classified into products **with high or low path-dependence.** The degree of path-dependence is a proxy for understanding the relative importance of having had a degree of relatedness to achieve specialisation.

- With a low degree of path-dependence (DIVE 3). The degree of relatedness is not a major barrier and therefore regions are more likely to specialize.
- With a high degree of path-dependence (DIVE 4). The degree of relatedness is a major barrier and therefore they are more ambitious diversification opportunities.

DIVE 3

3 Fertilizers → Electrical Appliances

Antofagasta already exports

DIVE 4

4 Copper ore → Orthopaedic devices

Antofagasta already exports

Key indicator 1 : Degree of "relatedness"

Indicator logic and interpretation:

- **"Relatedness" between products in the export basket or with products that enter the export basket (new specialisations) or might enter (potential new specialisations) is a useful device for understanding to which degree any two products share some common productive capabilities.** For instance, 7403 Refined copper & copper alloys and 2603 Copper ore – are clearly related in the sense that their specialisations are driven by the same sources or same set of production capabilities. Also, two products that belong to distinct sectors or seems apparently very different might have high relatedness as they share to a great extent the same productive capabilities (for example specialised and skilled work-force, institutions and regulations, financial ecosystem). **Relatedness between products already in the export basket** could provide a measure **of how diverse or concentrated** is the region set of production capabilities. In turn **this information can give an indication for trajectories of future diversification** such as the **ability to add a diverse set of new export specialisations.**
- Products with **high degree of relatedness** with products in the current export basket of a region are products where the region is **likely to have the required capabilities** to produce and export them.

Calculation: Following Hidalgo et al (2007), DIVE computes the network of relatedness as the minimum of the pairwise conditional probability (P) of being co-exported with revealed comparative advantage above the unity in the three-year period [t,t+2]. The relatedness between product i and product j at time t is, thus, computed as follows:

$$\varphi_{ijt} = min\{\mathrm{P}(EB_{it}|EB_{jt}), P(EB_{jt}|EB_{it})\}$$

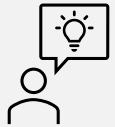
where EB_{it} denotes the presence of product i in the export basket at time t. The degree of similarity in the capability required to produce different goods changes over time and, thus, for computing distances in terms of relatedness we adopt year-specific networks.

Source: Country Customs Office and BACI/CEPII

Tool: Diversifying Industries and Value Chains for Exports (DIVE) – UNIDO

For a more detailed explanation about the calculation of key indicators, go to DIVE Tool Manual

Key indicator 2: Product index of path-departure (the inverse of path-dependence)



Indicator logic interpretation:

- It provides a measure for understanding **how important is the degree of relatedness with the pre-existing export basket for the acquisition of a comparative advantage in the product.**
- A product presents a **high index of path-departure** when is possible to observe that frequently countries develop a specialisation in these products even if they were specialised ex-ante in unrelated products.
- **A low index of path-departure** suggest that it is more difficult for a country or region to acquire a new specialisation in the product without having ex-ante the necessary productive capabilities (i.e. without having in the pre-existing export basket highly related products).

Calculation: To detect the extent to which a product follows 'the path' it is required to focus on the economy-product dimension – in order to capture the territory-specific heterogeneity of product path-dependency. It needs to consider the entire distribution of option set relatedness distribution. Each new entry's inverse measure of distance from the export basket ($dist_{i,EB_{kt}}$) is associated with a percentile in the distribution of the option set ranging from 0 to 100. Higher values denote path-dependent new entries; thus, it requires to transform such value in a measure of path-departure as follows:

$$percentile_{ikt} = 1 - rank_{OS,ikt}/100$$

Source: Custom Office in a country and BACI/CEPII – HS at 4-digit

Tool: Diversifying Industries and Value Chains for Exports (DIVE) - UNIDO

For a more detailed explanation about the calculation of key indicators, go to DIVE Tool Manual

Case study. Antofagasta (Chile)

The following slides share the **case study of the Antofagasta that uses the UNIDO tool (DIVE) for the analysis. Antofagasta** is Chile's main mining hub, with copper production driving its economy. Mejillones complements this role as an industrial and port centre that supports mining and energy supply. Historically reliant on coal-fired power, the area is now part of Chile's plan to phase-out coal by 2040. Several coal units in Mejillones have already been retired or scheduled for conversion, while the region is rapidly expanding solar and wind generation to meet future energy needs.

Phase-out coal in Antofagasta-Mejillones as part of the socio-ecological transformation process requires to diversify the economy into other potential sectors that could create new job opportunities and income generation for those affected by the transition.

There are 'multiple' roads that lead to diversification. This is particularly true for economies that have a strong concentration of their export baskets in a few sectors (like Antofagasta). Directing diversification does not necessarily mean a strong state-led industrial policy (picking winners). Governments can facilitate diversification by means of policies that identify areas in which the economy can develop comparative advantages (feasible paths) and implementing those actions (horizontal as well as vertical policies) that remove bottlenecks.

From more than 1,200 'potential targets', DIVE allowed to identify 74 DIVE TARGETS for Antofagasta (30 short-jumps + 44 long-jumps). This reduce the spectrum of potential opportunities significantly.

Case study. Antofagasta (Chile)
How to read the results in the next slides

- Tables that present diversification opportunities for Antofagasta "DIVE short jumps" are ranked by the degree of relatedness as this measure is more meaningful for products where the region might have the required capabilities.
- Tables that present diversification opportunities for Antofagasta "DIVE long jumps" are ranked by the level of sophistication gain considering these products exhibit low degree of relatedness, therefore is relevant to identify which products could contribute more to increase the level of complexity of the export basket of Antofagasta.
- The tables highlight the diversification opportunities identified and provide additional trade criteria that could be useful for policymakers to discuss what are their priorities as part of the diversification process. Therefore, the tables provide the following criteria represented in each column:

Supply side:

Sophistication gain (product sophistication compared to current export basket of Antofagasta)
Degree of competition (# of countries that have the product in the export basket which means have a specialisation in the product)
Product vulnerability (vulnerability index considering different dimension of competition)
Degree of product relatedness (compared to current export basket of Antofagasta)

Demand side:

Increase in global demand (growth in world trade in the product in the last decade 2013-2023)
Demand potential for Chilean exports (import penetration index for Chilean products=country import shares vs global import shares as a measure of revealed comparative disadvantages). This is calculated considering countries worldwide and the ones that have a trade agreement with Chile.

- More generally, the greener the indicator value, the higher it is in that criteria.

Case study. Antofagasta (Chile)
How to read the results in the next slides

- Scatter plots that present diversification opportunities for Antofagasta “DIVE short jumps” are classified by the degree of relatedness and demand potential for Chilean products as an example of how to prioritize products among each group based on relevant criteria.

- Scatter plots that present diversification opportunities for Antofagasta “DIVE long jumps” are classified by the level of sophistication gain and demand potential for Chilean products as an example of how to prioritize products among each group based on relevant criteria.

- Additionally, at the bottom of the scatter plot, some products are highlighted as they are considered Low Carbon Technology products according to IMF classification or could be relevant to develop strategic sector in Antofagasta to support the transition such as green hydrogen and renewable energy.

Case Study. Antofagasta (Chile)

14 Short jumps (DIVE 1): The required capabilities are potentially available for Antofagasta and there is a high number of competitors

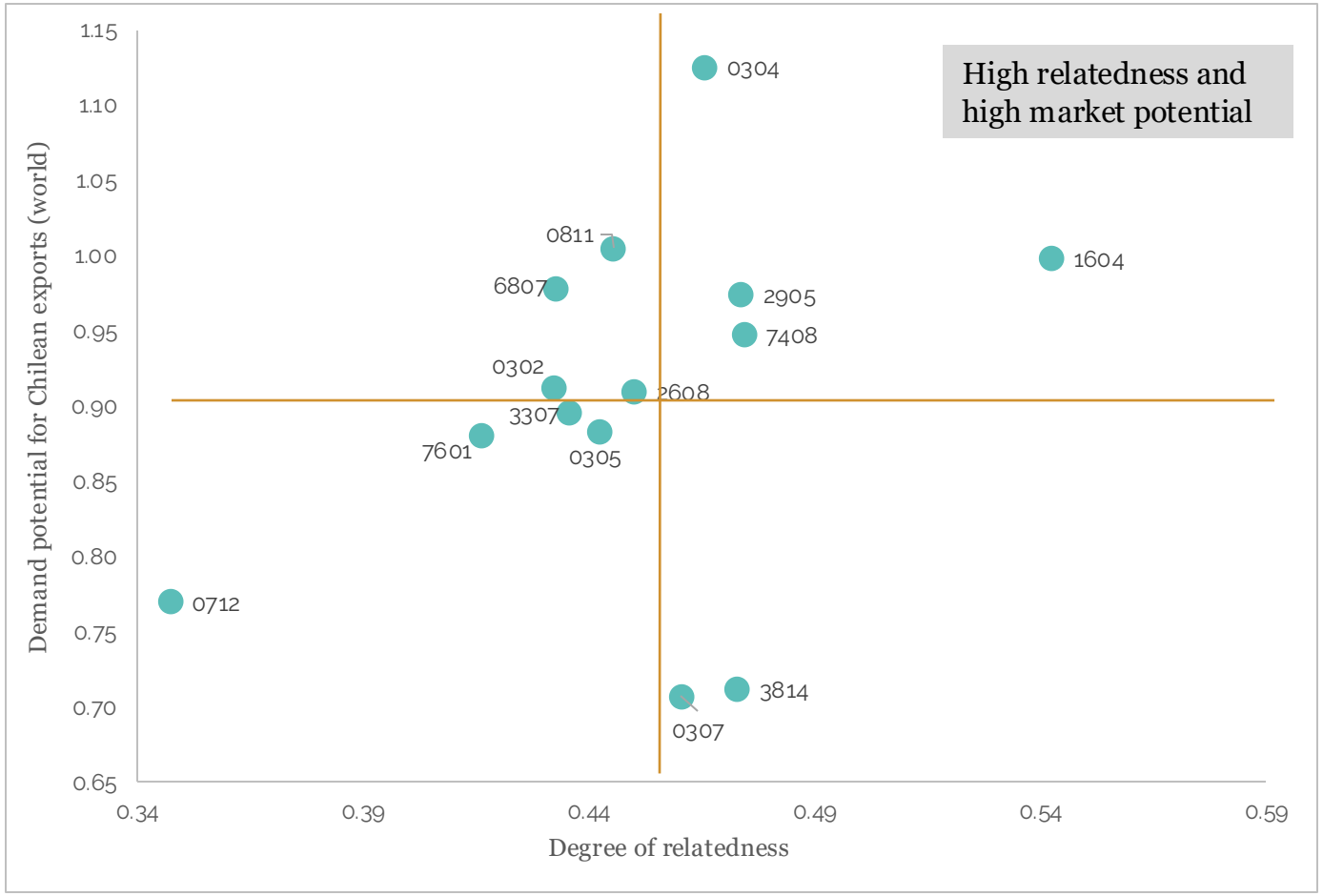
HS Code 4-dig	HS Product description	Product sector	Sofistication gain ($)	Average annual growth in global trade (2013-2023)	# of countries with product in the export basket (2019-2021)	Degree of product relatedness	Demand potential for Chilean exports (world)	Demand potential for Chilean exports (importers with trade agreenment)
1604	Prepared or canned fish	Agroindustry	-2,260.34	0.94%	42	0.542	0.998	0.969
7408	Copper wire	Metal manufacturing	5,895.52	1.78%	25	0.474	0.948	0.816
2905	Acrylic alcohols	Chemicals	7,343.27	-2.50%	31	0.474	0.974	1.009
3814	Organic compound solvents and thinners	Chemicals	8,156.03	-0.06%	37	0.473	0.712	0.559
0304	Fresh, chilled, or frozen fish fillets	Agroindustry	10,146.05	3.15%	49	0.466	1.125	1.230
0307	Mollusks	Agroindustry	-3,486.63	0.79%	44	0.461	0.707	0.746
2608	Zinc ore	Minerals	-5,959.60	2.75%	34	0.450	0.910	0.983
0811	Frozen fruits	Agroindustry	1,059.00	5.25%	37	0.445	1.005	1.092
0305	Dried, salted, or smoked fish	Agroindustry	13,392.83	1.48%	43	0.442	0.883	0.843
3307	Toiletries	Chemicals	10,978.07	2.13%	33	0.436	0.895	0.836
6807	Asphalt	Construction	10,189.42	-0.38%	30	0.433	0.979	0.930
0302	Fresh or chilled fish, excluding fillets	Fishing	4,119.78	4.04%	47	0.432	0.912	0.971
7601	Unworked aluminum	Metal manufacturing	14,773.03	3.64%	38	0.416	0.880	0.955
0712	Dried vegetables	Agroindustry	-3,037.95	1.44%	26	0.347	0.770	0.767

Note: Table ranked according the degree of relatedness
Source: Chilean Customs and BACI/CEPII.

Higher value in the indicator

Lower value in the indicator

Case study. Antofagasta (Chile)
Short jumps with many competitors



HS Code 4-dig	HS Product description
1604	Prepared or canned fish
7408	Copper wire
2905	Acrylic alcohols
3814	Organic compound solvents and thinners
0304	Fresh, chilled, or frozen fish fillets
0307	Mollusks
2608	Zinc ore
0811	Frozen fruits
0305	Dried, salted, or smoked fish
3307	Toiletries
6807	Asphalt
0302	Fresh or chilled fish, excluding fillets
7601	Unworked aluminium
0712	Dried vegetables

•7408 Copper wire: used for electrolysers for green hydrogen.

Source: Chilean Customs and BACI/CEPII.

Case study. Antofagasta (Chile)

16 Short jumps (DIVE 2): The required capabilities are potentially available for Antofagasta and there is a low number of competitors

HS Code 4-dig	HS Product description	Product sector	Sofistication gain ($)	Average annual growth in global trade (2013-2023)	# of countries with product in the export basket (2019-2021)	Degree of product relatedness	Demand potential for Chilean exports (world)	Demand potential for Chilean exports (importers with trade agreenment)
2810	Boron oxides; boric acids	Chemical	15,885.19	0.90%	9	0.630	1.097	1.179
2925	Compounds with carboximide function	Chemical	18,304.35	5.12%	13	0.476	1.354	1.381
7611	Aluminum containers, >300 liters	Metal manufacturing	11,665.42	0.31%	18	0.463	0.821	0.773
8427	Forklifts	Machinery	18,045.18	8.51%	14	0.456	1.041	1.061
4705	Semi-chemical wood pulp	Agroindustry	23,987.96	0.28%	11	0.455	0.785	0.719
3909	Amino resins	Chemical	16,340.23	2.62%	16	0.431	0.867	0.838
8462	Machine tools for molding and forging metals	Machinery	16,200.64	-0.71%	13	0.430	1.055	1.031
6902	Bricks, tiles, and similar refractory ceramic products	Construction	7,094.67	1.34%	15	0.422	0.920	0.759
8547	machines	Electronics	7,060.68	3.14%	19	0.404	0.773	0.728
3801	Artificial graphite	Chemical	11,098.33	7.41%	13	0.401	1.085	1.164
1522	Degreasers and wax residues	Agroindustry	3,298.23	16.33%	17	0.385	0.597	0.620
2806	Hydrochloric acid	Chemical	10,215.09	6.13%	19	0.366	0.823	0.765
2850	Hydrides, nitrides, azides, silicides, and borides	Chemicals	20,817.90	2.28%	8	0.346	0.783	0.762
6901	Bricks, blocks, and other ceramic products	Construction	-3,618.22	0.88%	16	0.333	0.804	0.614
1603	Extracts and juices from meat or fish	Agroindustry	20,828.82	-0.64%	12	0.333	0.832	0.927
3803	Pine oil	Chemical	27,947.50	7.75%	10	0.325	0.792	0.827

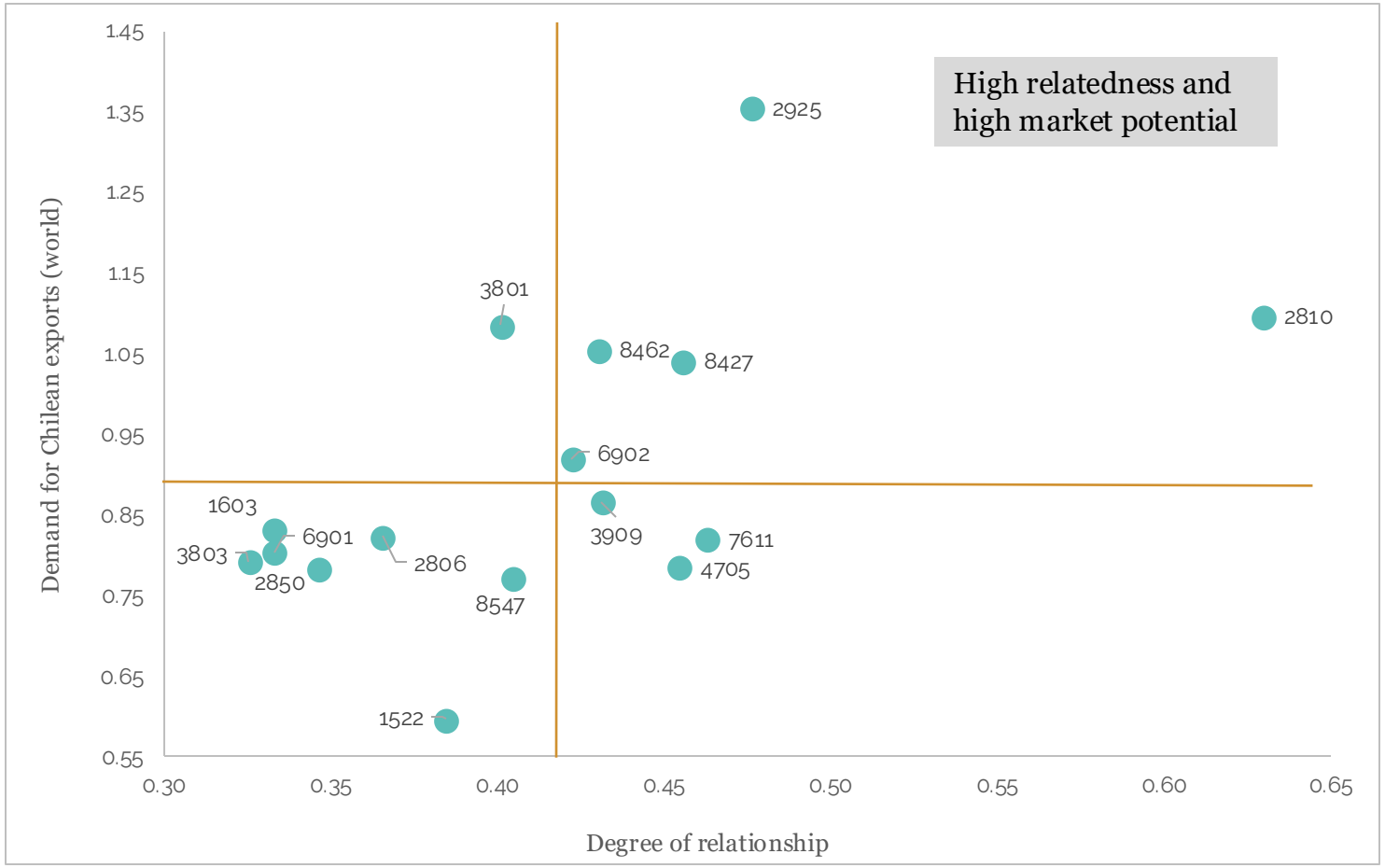
Note: Table ranked according to degree of relatedness
Source: Chilean Customs and BACI/CEPII.

Higher value in the indicator

Lower value in the indicator

Case study. Antofagasta (Chile)

Short jumps with few competitors



HS Code 4-dig	HS Product description
2810	Boron oxides; boric acids
2925	Compounds with carboximide function
7611	Aluminum containers, >300 liters
8427	Forklifts
4705	Semi-chemical wood pulp
3909	Amino resins
8462	Machine tools for molding and forging metals
6902	Bricks, tiles, and similar refractory ceramic products
8547	machines
3801	Artificial graphite
1522	Degreasers and wax residues
2806	Hydrochloric acid
2850	Hydrides, nitrides, azides, silicides, and borides
6901	Bricks, blocks, and other ceramic products
1603	Extracts and juices from meat or fish
3803	Pine oil

- 2810 Boron oxides; boric acids: used as a key input in ceramics, glass, steel production and as a flame retardant (some of these inputs for green hydrogen) [already an important export product for Chile].
- 7611 Aluminium containers: Low Carbon Technology (LCT) products according to IMF classification.

Source: Chilean Customs and BACI/CEPII.

Case study. Antofagasta (Chile)

17 Long jumps (DIVE 3): Products not highly related to Antofagasta's current export basket but for which the lack of relatedness IS NOT a fundamental barrier (low degree of path-dependence)

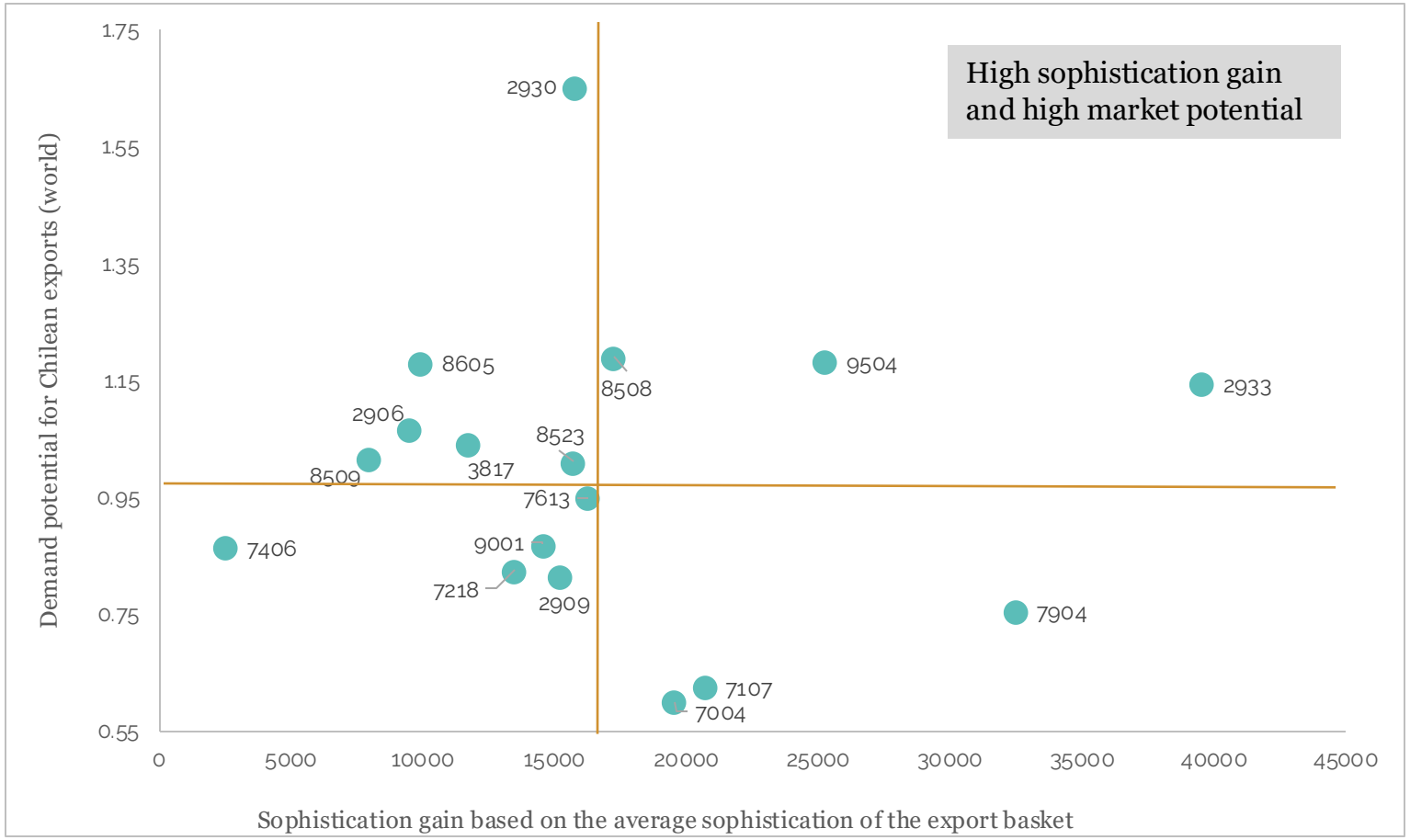
HS Code 4-dig	HS Product description	Product sector	Sofistication gain ($)	Average annual growth in global trade (2013-2023)	# of countries with product in the export basket (2019-2021)	Degree of product relatedness	Product vulnerability	Demand potential for Chilean exports (world)	Demand potential for Chilean exports (importers with trade agreenment)
2933	Heterocyclic compounds with nitrogen atoms only	Chemical	39,563.48	7.27%	11	0.220	0.444	1.144	1.242
7904	Bars and wires of zinc	Metal manufacturing	32,480.39	0.93%	12	0.232	0.617	0.754	0.703
9504	Games	Toys	25,280.73	6.53%	12	0.235	0.577	1.182	1.302
7107	Metals coated with silver	Metal manufacturing	20,690.00	-1.14%	6	0.173	0.386	0.625	0.687
7004	Extruded and blown glass	Construction	19,539.19	-8.34%	6	0.211	0.554	0.600	0.601
8508	Vacuum cleaners	Electronics	17,232.56	3.84%	14	0.279	0.458	1.190	1.256
7613	Aluminum containers for compressed or liquefied gas	Metal manufacturing	16,263.21	5.03%	12	0.285	0.493	0.949	0.978
2930	Organosulfur compounds	Chemical	15,731.68	0.33%	14	0.273	0.524	1.653	1.711
8523	Sound storage media	Electronics	15,721.36	3.85%	10	0.258	0.516	1.011	1.085
2909	Ethers	Chemical	15,233.44	-1.93%	16	0.249	0.468	0.816	0.846
9001	Optical fibers	Instruments and apparatus	14,561.45	0.66%	16	0.260	0.497	0.868	0.933
7218	Stainless steel ingots	Metal manufacturing	13,474.80	10.98%	7	0.177	0.489	0.825	0.904
3817	Mixed alkylbenzenes	Chemical	11,699.66	-1.90%	13	0.277	0.454	1.042	0.795
8605	Passenger railway or tram cars, non-self-propelled	Vehicles	9,932.35	-0.47%	14	0.263	0.605	1.180	0.734
2906	Cyclic alcohols	Chemical	9,497.25	0.66%	14	0.232	0.444	1.067	1.070
8509	Electromechanical household appliances	Electronics	7,966.95	4.04%	14	0.249	0.450	1.016	1.062
7406	Copper powders and flakes	Metal manufacturing	2,531.54	7.86%	12	0.240	0.460	0.864	0.940

Note: Table ranked according to sophistication gain
Source: Chilean Customs and BACI/CEPII.

Higher value in the indicator

Lower value in the indicator

Case study. Antofagasta (Chile)
Long jumps with low degree of path dependence



HS Code 4-dig	HS Product description
2933	Heterocyclic compounds with nitrogen atoms only
7904	Bars and wires of zinc
9504	Games
7107	Metals coated with silver
7004	Extruded and blown glass
8508	Vacuum cleaners
7613	Aluminum containers for compressed or liquefied gas
2930	Organosulfur compounds
8523	Sound storage media
2909	Ethers
9001	Optical fibers
7218	Stainless steel ingots
3817	Mixed alkylbenzenes
8605	Passenger railway or tram cars, non-self-propelled
2906	Cyclic alcohols
8509	Electromechanical household appliances
7406	Copper powders and flakes

- 7904 Strategic zinc bars and wires for the development and expansion of renewable energy infrastructures
- 7613 Aluminium containers for compressed or liquefied gas used for the storage and transportation of green hydrogen or other renewable energy infrastructure

Source: Chilean Customs and BACI/CEPII.

Case study. Antofagasta (Chile)

27 Long jumps (DIVE 4): Products not highly related to Antofagasta's current export basket but for which the lack of relatedness IS a fundamental barrier (high degree of path- dependence)

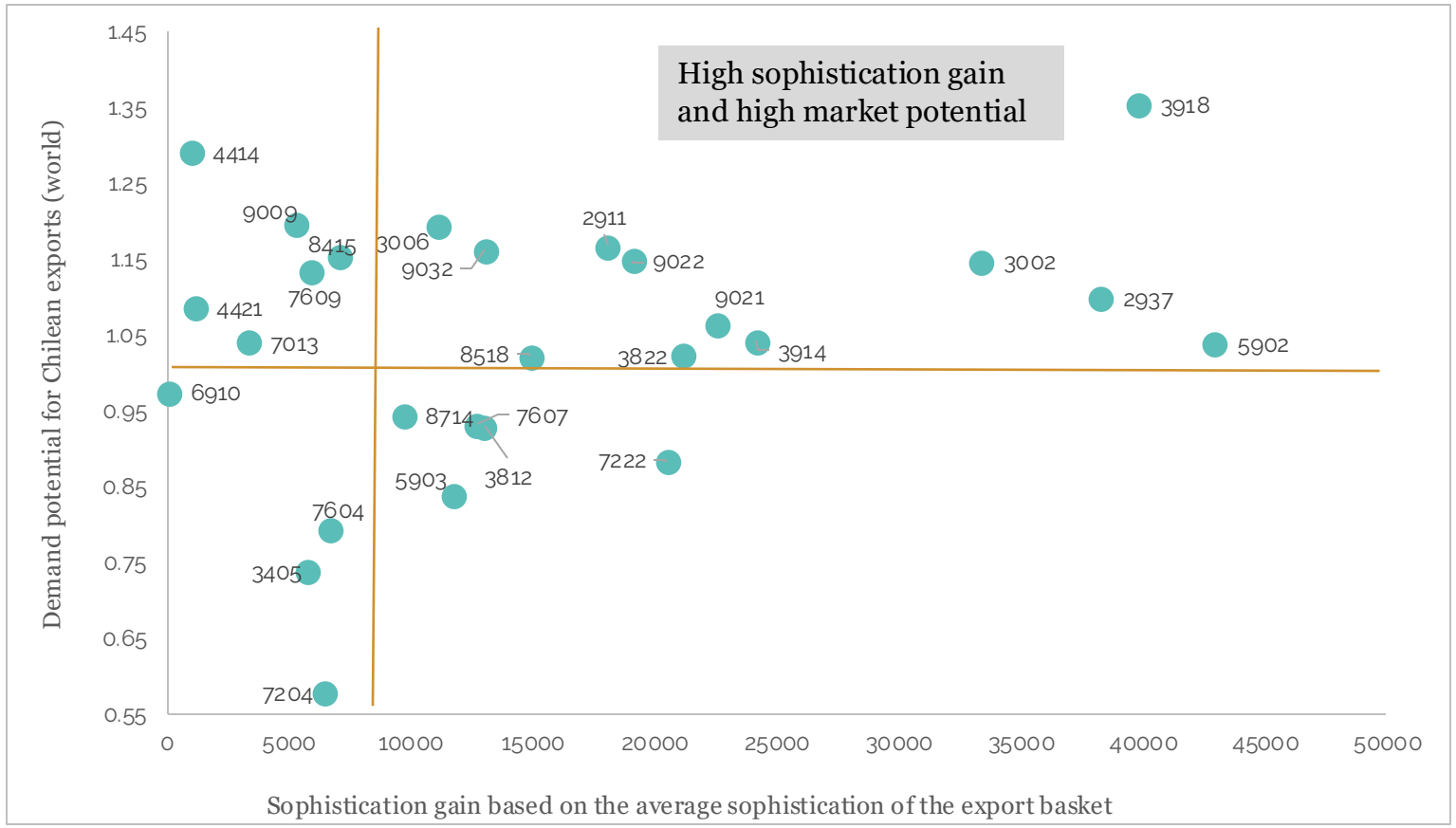
HS Code 4-dig	HS Product description	Product sector	Sofistication gain ($)	Average annual growth in global trade (2013-2023)	# of countries with product in the export basket (2019-2021)	Degree of product relatedness	Product vulnerability	Demand potential for Chilean exports (world)	Demand potential for Chilean exports (importers with trade agreenment)
5902	Tire cord fabric	Textile	42957.01	-0.56%	13	0.261	0.357	1.039	0.986
3918	Plastic floor coverings	Chemical	39814.17	6.68%	8	0.189	0.214	1.354	1.441
2937	Hormones	Chemical	38280.91	8.61%	13	0.193	0.354	1.098	1.210
3002	Serums and vaccines	Chemical	33394.42	12.32%	18	0.284	0.411	1.147	1.228
3914	Polymer-based ion exchangers	Chemical	24146.02	6.02%	13	0.269	0.337	1.042	1.084
9021	Orthopedic devices	Instruments and apparatus	22560.38	4.76%	22	0.258	0.480	1.064	1.145
3822	Diagnostic or laboratory reagents	Chemical	21183.97	-8.28%	20	0.253	0.407	1.023	1.035
7222	Other stainless steel bars and rods	Metal manufacturing	20516.00	2.80%	15	0.286	0.347	0.884	0.919
9022	X-ray machines	Instruments and apparatus	19100.27	2.29%	12	0.266	0.243	1.149	1.153
2911	Acetals and hemiacetals	Chemical	18042.75	-0.81%	7	0.261	0.262	1.168	1.200
8518	Microphones	Electronics	14899.49	4.64%	14	0.193	0.304	1.022	1.060
9032	Automatic regulating instruments	Instruments and apparatus	13029.07	0.21%	20	0.255	0.441	1.162	1.225
3812	Stabilizers for rubber or plastic	Chemical	12998.77	1.01%	15	0.271	0.327	0.929	0.862
7607	Aluminum foil < 0.2 mm	Metal manufacturing	12695.36	2.48%	21	0.222	0.491	0.932	0.889
5903	Textile fabrics impregnated with plastics	Textile	11753.18	1.03%	12	0.215	0.358	0.840	0.738
3006	Pharmaceutical products	Chemical	11082.31	2.86%	25	0.279	0.565	1.195	1.237
8714	Motorcycle parts or wheelchairs	Vehicles	9686.78	4.00%	13	0.228	0.266	0.944	0.923
8415	Air conditioning	Instruments and apparatus	7106.02	4.56%	17	0.216	0.374	1.155	1.142
7604	Aluminum bars	Metal manufacturing	6708.64	3.03%	39	0.282	0.716	0.794	0.752
7204	Waste and ferrous scrap	Metal	6438.80	0.19%	79	0.284	0.822	0.578	0.507
7609	Aluminum tube or pipe fittings	Metal manufacturing	5930.25	4.09%	17	0.262	0.432	1.134	1.205
3405	Polishes and creams	Chemical	5786.09	0.84%	23	0.274	0.463	0.738	0.702
9009	Electrostatic photocopiers	Instruments and apparatus	5311.20	15.56%	15	0.276	0.323	1.197	1.136
7013	Decorative glass items for indoor use	Construction	3348.51	0.59%	21	0.275	0.444	1.040	0.982
4421	Other wooden items	Agroindustry	1143.58	1.90%	23	0.248	0.574	1.086	1.173
4414	Wooden frames	Agroindustry	989.94	-0.90%	13	0.259	0.308	1.291	1.425
6910	Sinks, basins, and similar ceramic sanitary installations	Construction	86.60	3.37%	17	0.261	0.459	0.974	0.830

Note: Table ranked according to sophistication gain
Source: Chilean Customs and BACI/CEPII.

Higher value in the indicator

Lower value in the indicator

Case study. Antofagasta (Chile)
Long jumps with high degree of path dependence



- 3914 Ion exchangers based on strategic polymers for electrolysers (according to IMF classification of environmental goods)
- 7222 Other stainless-steel bars and rods used for renewable energy infrastructure.

HS Code 4-dig	HS Product description
5902	Tire cord fabric
3918	Plastic floor coverings
2937	Hormones
3002	Serums and vaccines
3914	Polymer-based ion exchangers
9021	Orthopedic devices
3822	Diagnostic or laboratory reagents
7222	Other stainless steel bars and rods
9022	X-ray machines
2911	Acetals and hemiacetals
8518	Microphones
9032	Automatic regulating instruments
3812	Stabilizers for rubber or plastic
7607	Aluminum foil < 0.2 mm
5903	Textile fabrics impregnated with plastics
3006	Pharmaceutical products
8714	Motorcycle parts or wheelchairs
8415	Air conditioning
7604	Aluminum bars
7204	Waste and ferrous scrap
7609	Aluminum tube or pipe fittings
3405	Polishes and creams
9009	Electrostatic photocopiers
7013	Decorative glass items for indoor use
4421	Other wooden items
4414	Wooden frames
6910	Sinks, basins, and similar ceramic sanitary installations

Source: Chilean Customs and BACI/CEPII.

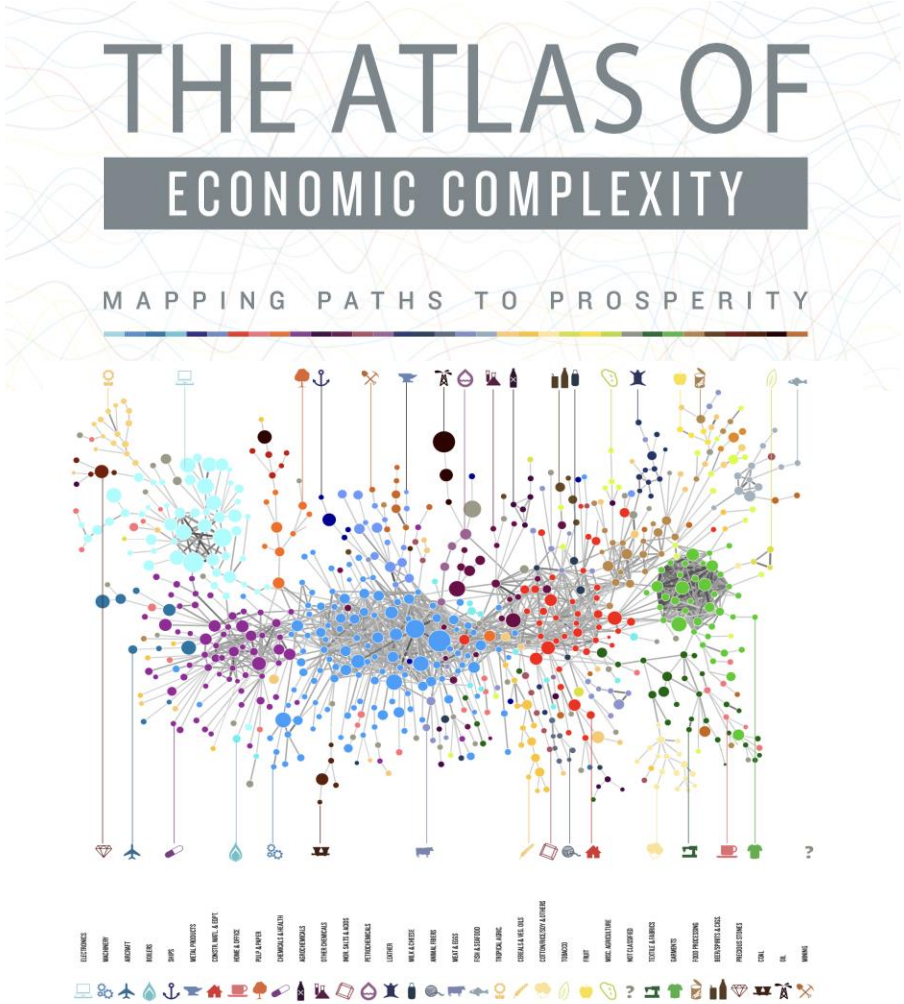
Case study: Lessons learned from the application of the methodology in Antofagasta (Chile)

- This methodology relies on export data on a regional level that allows an identification of targets based on solid economic concepts (ex. relatedness / export potential) and rigorous empirical analysis validated by the research community. While **reducing complexity and explicitly considering 'feasibility' of some diversification patterns, it does not imply desirability** of alternative diversification patterns.
- The **identification of opportunities** obtained using the **DIVE methodology can (and should)** be matched with **additional priorities/criteria.** Further policy discussion will be necessary to decide which paths are more desirable. A political decision based on multiple criteria (supply capacity, demand opportunity, environmental impacts, labour market effects, involvement of MSMEs…).
- The **methodology** is based on **sophisticated calculations** that could be **applied by technicians in public or private institutions** with support and **supervision from international expert**s on the topic. Econometric and economics background to understand the method and interpret the results in a meaningful way.
- These findings were **presented in April 2025 at a Regional Workshop in Mejillones-Antofagasta** to stimulate debate on potential diversification pathways to support the coal phase-out. This material will be useful for the to consider when designing the **Just Transition Plan in Mejillones.**

3. Harvard Kennedy School of Government (HKS) tool:

"Atlas of Complexity"

HKS tool – Atlas of Complexity
Supporting the identification of diversification opportunities



To access the Atlas of Complexity and more detail about the methodology, go to Atlas of Complexity

The Atlas of Economic Complexity is a data visualisation tool that allows people to explore global trade flows across markets, track these dynamics over time and discover new growth opportunities for every country.

- The **Product Space** is a key concept within the framework of the Atlas of Complexity and is a tool, developed by academics, to visualize the structure of an economy.
- It is presented as a **network connecting products** that are **likely be co-exported**
- It **can be used to predict future exports**, since countries are more likely to start exporting products that are related to current exports.
- Hence, the product space can be **useful in identifying promising avenues for export diversification** and classify them in
    - **Short jumps**. opportunities *closer* to existing knowhow; lower risk & lower reward
    - **Long jumps.** opportunities *further* from existing knowhow; higher risk & higher reward

The Product Space: Key concepts and definition

- The **Product Space** is a **network connecting products** that are likely to be co-exported. Note, however, that **products located in the periphery of the product space are less sophisticated** (less complex) and with a lower income elasticity of demand for exports than those in the core.

→ **Complexity** measures the "**knowledge" in a society expressed in the products it makes.**

- Hence, not all products are the same qualitatively as carriers of economic development.
- Products are linked by their **proximity** to each other, based on the **probability of co-export** of both two products. The higher the proximity, the more similar are the involved products assumed to be.

→ **Proximity** measures the "**similarity**" ***between different products***

By contrast, **relatedness measures the distance** between a given product and the export basket of all the products that a given country currently specializes in.

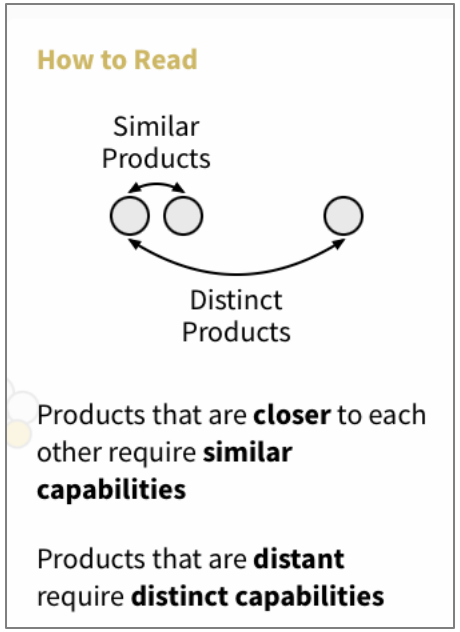
→ **Relatedness** measures the "**compatibility" between** the ***structure of an economy*** and a **given *productive activity***

Sources: https://atlas.hks.harvard.edu/ and www.tepav.org.tr/upload/files/haber/1391612021-8.OECD_Margarita_Kalamova_Product_Space_Approach.pdf

The Product Space: Application

- The concept of relatedness can be used to **estimate whether a country's export structure is compatible with what is needed to export a given product** (e.g. cars).
- One can take data on the products that a country currently exports and, using proximity, **make predictions** on which products the country is **more likely to export** (and, hence, also to produce) in the future.
  - The closer a product is in the product space map to other products which the country already exports, the more likely it is for that product to emerge as a new export item.

- **Underlying** these predictions is the **assumption that a country's current export basket reflects the productive capabilities currently existing** in the country and that these existing productive capabilities are more likely to be useful to start the production of new goods that require similar capabilities than those that require very different capabilities.
- Thereby, this method leverages the idea that **similar economic activities require similar productive capabilities** (without having to identify what these capabilities are) and countries tend to diversify by moving into nearby and related products or into those that require similar knowhow to build on existing capabilities.
- The Product Space helps to define **paths to diversify a country's economy** based on the connectedness of its knowhow.



Data requirements, advantages and challenges of the tool

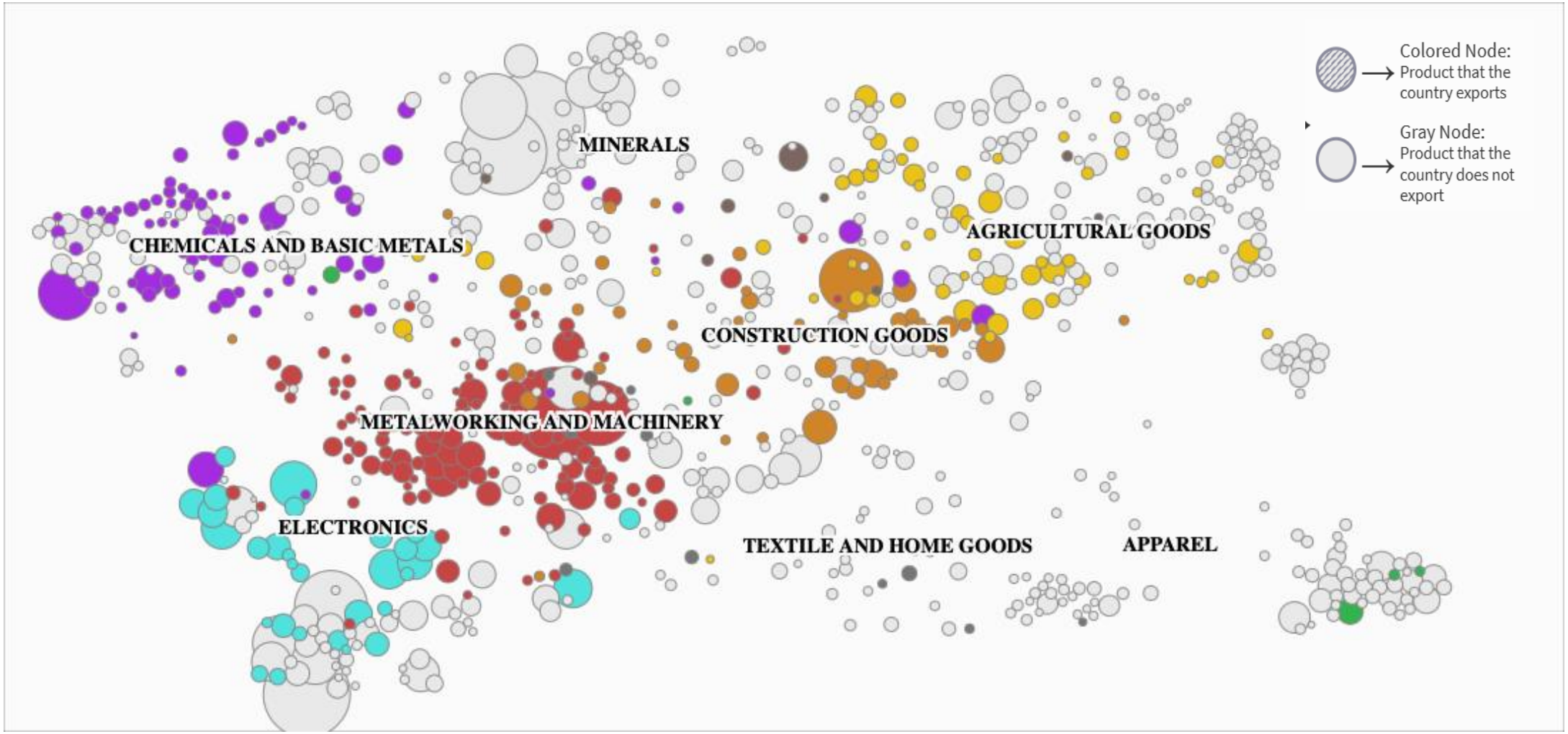
Data requirements. The **methodology considers only export data** using HS at 4 digit to calculate the degree of **relatedness** between products and identify a preliminary list of opportunities (short and long jumps) and classify them based on their level of **complexity,** arguing that countries with exports that are more complex than expected for their income level tend to experience faster economic growth. Consequently, this growth can be fuelled by a process of diversifying knowledge and expertise, enabling these countries to produce a wider array of increasingly complex goods and services.

Advantages and challenges of the tool. This tool has a high accessibility and is easy to use as results are available on-line, however the main challenge is the limited adjustability, as this is offered only at a country level. Nevertheless, it remains a **valuable resource to provide insights for discussions about the diversification process in a country.**

To access the Atlas of Complexity and more detail about the methodology, go to Atlas of Complexity

Case study: Germany's Product Space

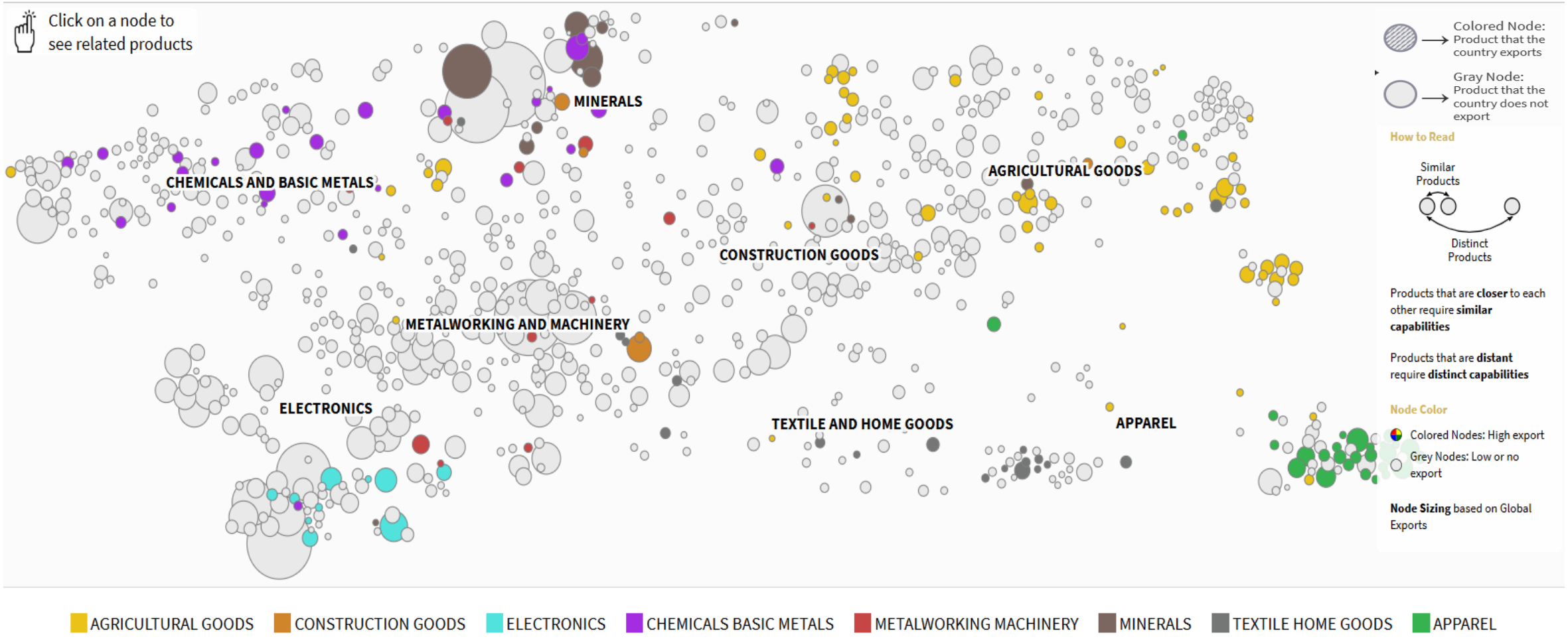
Specialised in more complex products: chemicals, electronics, metalworking & machinery



Source: https://atlas.hks.harvard.edu/

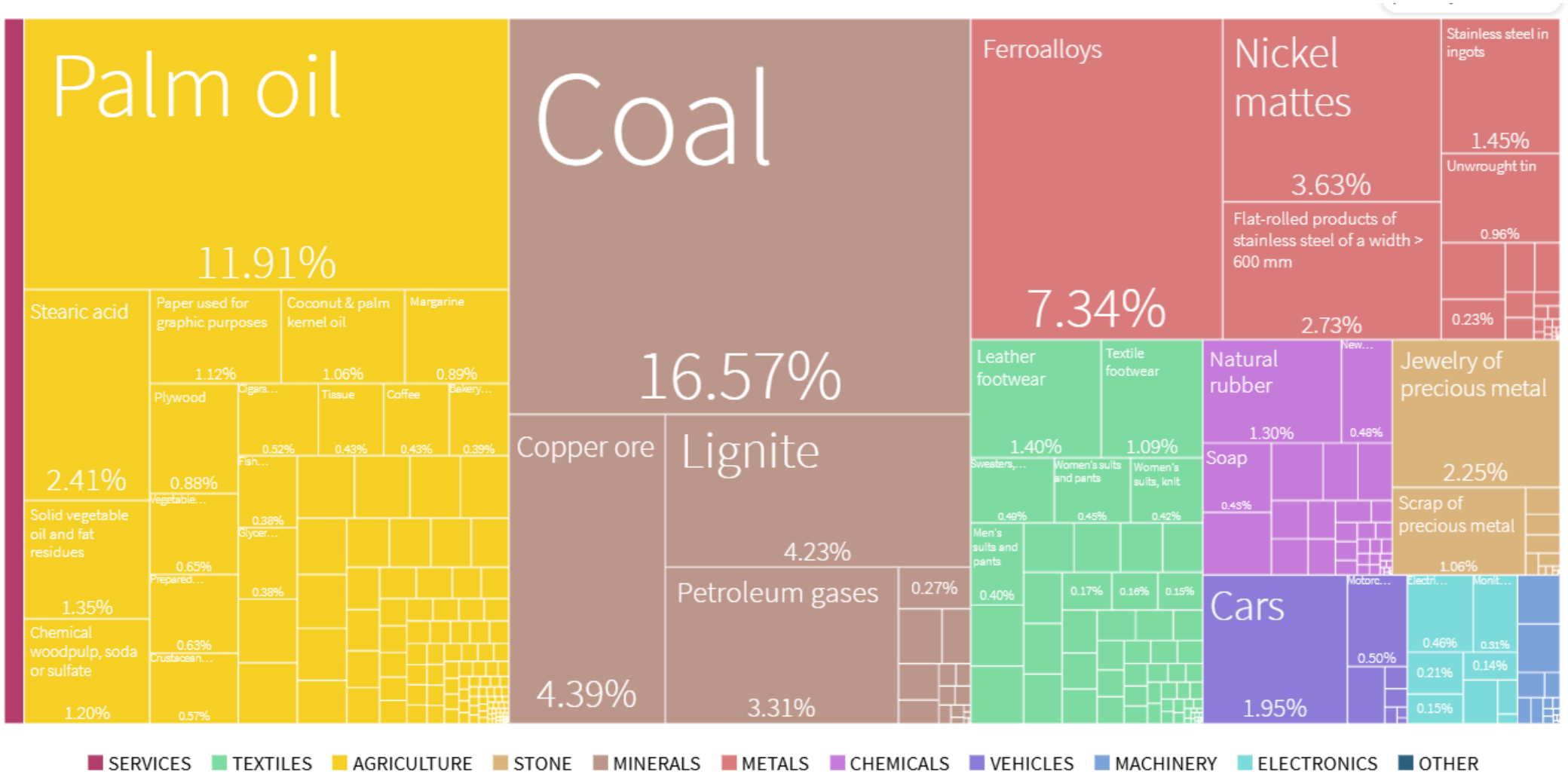
Case Study: Indonesia´s Product Space

Specialised in less complex products: coal, textiles and agricultural goods



Source: https://atlas.hks.harvard.edu/explore/productspace?exporter=country-360/

Export structure for Indonesia
High concentration in minerals (coal) and agriculture (palm oil).



Identification of opportunities for Indonesia based on the product space

High

Complexity

Low

Low **Distance** High

Source: https://atlas.hks.harvard.edu/

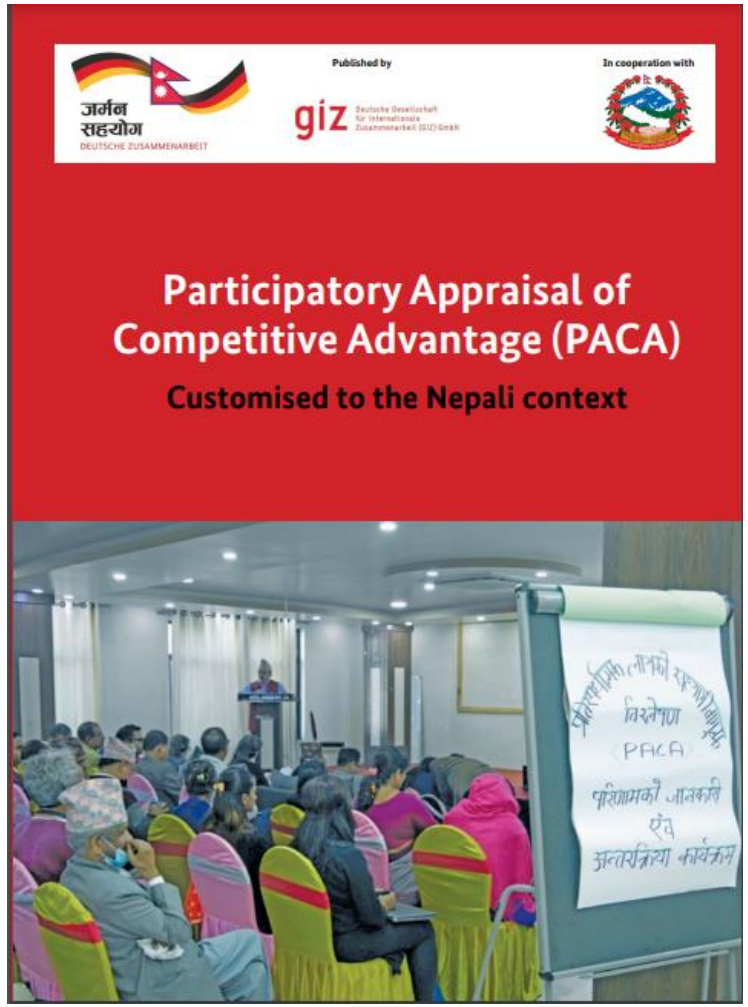
4.3 Qualitative tools to identify diversification opportunities: PACA and DMUI methodologies

The process of identifying economic diversification opportunities for coal regions must incorporate qualitative information to enhance the quantitative analysis with insights into the experiences, knowledge, motivations, interests and challenges faced by local communities and stakeholders. This approach ensures that the territorial perspective is taken into consideration, which quantitative data alone may overlook.

Different types of qualitative tools could be employed by policy practitioners. This section introduces as an example two methodologies that involve secondary information research, workshops and focus group with key stakeholders for discussion.

PACA– Participatory Appraisal of Competitive Advantage

Supporting the identification of diversification opportunities



The PACA methodology, as mentioned in Chapter 1 of the Handbook, is designed to **engage stakeholders** in **identifying and analysing the competitive advantages of a region**, sector, or organisation. This participatory approach fosters collaboration among various stakeholders, including local communities, businesses, and policymakers, ensuring that diverse perspectives are considered in the assessment process.

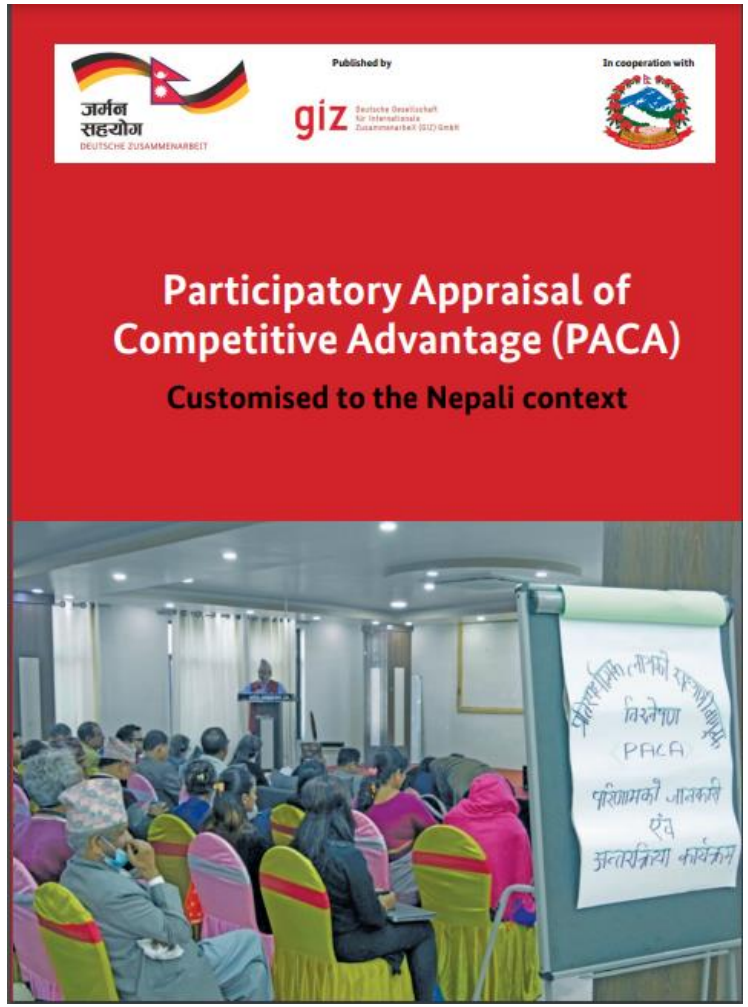
The process involves different activities to gather qualitative data to support the analysis of the economy and its potentials. It considers the following:

a. **secondary literature review**, statistics, facts and figures about the local economy
b. **intermediate participatory processes (i.e. workshops)** to define assumptions about the dominant economic sub-sectors (based on a comparative advantage), select the key ones and validate/amend them using tools such as mind maps or SWOT analyses (Strengths, Weaknesses, Opportunities, Threats) to visually represent stakeholder inputs and synthesize complex information.

For a detailed explanation about the PACA tool go to:
Mesopartner PACA

PACA– Participatory Appraisal of Competitive Advantage

Supporting the identification of diversification opportunities



c. **primary information collection (i.e. interviews and mini-workshops)** to gather qualitative data to learn more about the local economy and collect information about specific segments (sectors, clusters, value chains, actor groups) in the local economy
d. **final participatory process (i.e. workshop)** to prepare a diagnostic of the local economy and develop short and medium-term projects relevant to the identified economic sub-sectors, and a presentation event of key findings to get the buy-in of project champions.

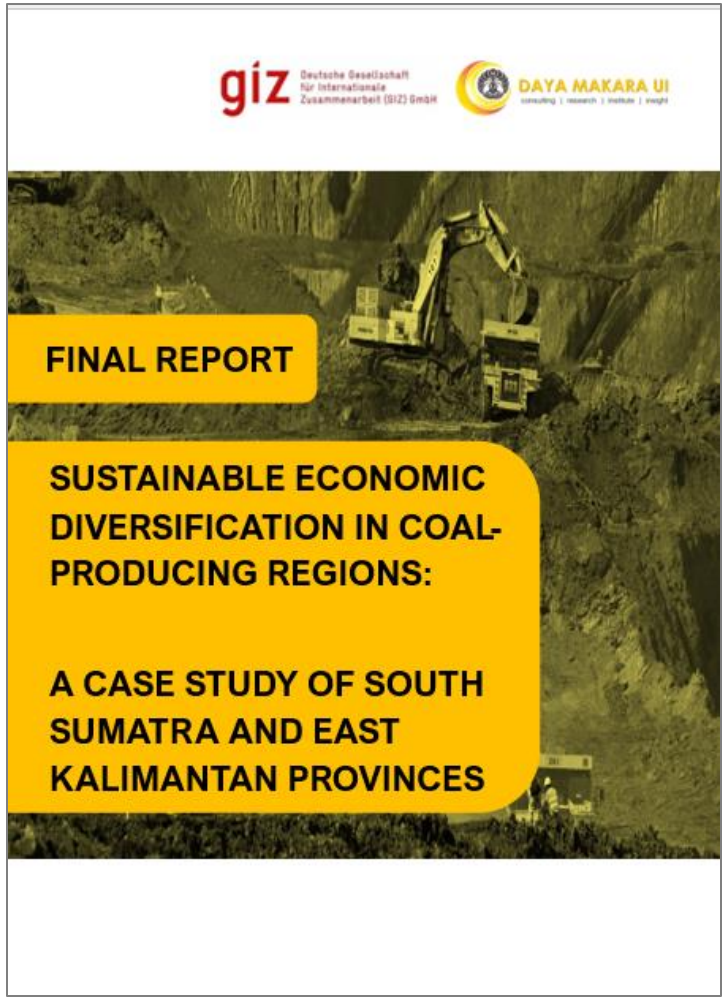
The PACA methodology emphasizes **participatory engagement, collecting qualitative data** through collaborative workshops and discussions. This approach not only enriches the understanding of competitive advantages but also fosters ownership and commitment among stakeholders, ultimately leading to more effective and relevant strategic planning

For an application of the PACA tool in a country got to:
PACA customised to the Nepali context

For a detailed explanation about the PACA tool go to:
Mesopartner PACA

DMUI– Daya Makara Universitas Indonesia

Supporting the identification of diversification opportunities



DMUI has implemented a methodology to support East Kalimantan and South Sumatra in Indonesia in the transition process to phase-out coal. It involved the use of qualitative information and employed a data-driven approach using an Input-Output Analysis (IOA) model, for the following purposes:

- recommend economic outputs that East Kalimantan and South Sumatra can prioritize to help offset economic risks tied to declining coal demand;
- develop scenarios that support sustainable development pathways for both regions;
- assess the impacts of these scenarios on essential macroeconomic indicators and greenhouse gas emissions to highlight the benefits of economic diversification; and
- provide both short- and medium-term policy recommendations to assist provincial governments in guiding a just and sustainable transition for their communities.

Specifically, for the selection of outputs for economic diversification information was collected through:

a. secondary data examination;
b. in-depth **interviews** with local entrepreneurs;
c. focus group discussion with governmental officials to specify the goods and services that Provincial Government of East Kalimantan and South Sumatra should consider in their economic diversification strategies.

DMUI– Daya Makara Universitas Indonesia

Supporting the identification of diversification opportunities

With the collected information a Multi Criteria Decision Analysis (MCDA) was conducted to provide ordinal rank* towards the prevailing economic sectors in both evaluated provinces.

The economic outputs were classified into two main groups:

- **Existing outputs** are goods and services being produced or assembled by preestablished producers in both evaluated provinces. Those preestablished producers already have a proven capacity to perform medium or large-scale manufacturing process.
- **Innovative outputs** are goods and services which are not produced yet or still on the planning stage by 2024. Most of the innovative outputs are consistent with Government of Indonesia's sustainable development goals.

Note: *Ordinal rank means that economic sectors can be ordered based on the assessment criteria but is not possible to say which sector provides more opportunity.

Sector	Product	
Industry: food and beverages	– Crude palm oil – Carrageenan – Pet food	- Seaweed - Cocoa powder - Oleo food
Water supply, waste management, and recycling	– Recycled plastic	
Industry: transport equipment	– Electric Vehicle	
Provision of food and beverages	– Ecotourism	
Provision of accommodation	– Ecotourism	
Construction		
Fisheries	– Tiger shrimp	
Industry: machineries and other unclassified supplies		
Industry: wood, wood products, cork products, as well as products from bamboo, rattan, or similar Materials		
Husbandry		

Sector	Product	
Chemical, Pharmaceutical and Traditional Medicine Industry	– Oleochemical – Green hydrogen	- Bioavtur - Green ammonia
Electricity	– Power plant	
Textile and Apparel Industry	– Natural fibre	
Mining and quarrying	– Silica sand	
Perennial crop agriculture	– Rubber	- Cocoa

Annex 1

Annex 1. Economic dimension: criteria and indicators

Area	No.	Criteria	Level vs potential	Type of indicator	Indicator
Production	1	Level of economic contribution	Level	Quantitative	Share of regional VA in regional GDP (%)
	2	Value addition growth potential	Potential	Quantitative	Export-value added elasticity
	3	Additional transformation potential	Potential	Qualitative	Possibility of increase the level of processing
	4	Potential for productivity gains	Potential	Quantitative	Labor productivity CAGR (%)
Trade	5	Level of export contribution	Level	Quantitative	Share of regional VC exports in regional total exports (%)
	6	Export dynamism	Potential	Quantitative	Compound Annual Growth Rate (CAGR) (%)
	7	Regional export specialisation	Level	Qualitative / Quantitative	Revealed Comparative Advantage (RCA)
	8	Import substitution potential	Potential	Quantitative	Imports from the world + existing exports to the world (US$)
	9	Regional market potential	Potential	Quantitative	CAGR of intraregional trade (%)
	10	Resilience potential through market diversification	Potential	Quantitative	Share of 5 main markets in total markets
Structural factors	11	Quality upgrading potential	Potential	Qualitative / Quantitative	Unit values differences (US$/Kg)
	12	Linkages to regional raw material	Level	Quantitative	Share of finished exports in total raw and semi-finished material (%)
	13	Opportunities for innovation and technology dev.	Potential	Qualitative	Potential to develop new products or improve processes
	14	Existing investment interest	Level	Qualitative	Interest of local or foreign investors to engaged in the VC

Annex 1. Social dimension: criteria and indicators

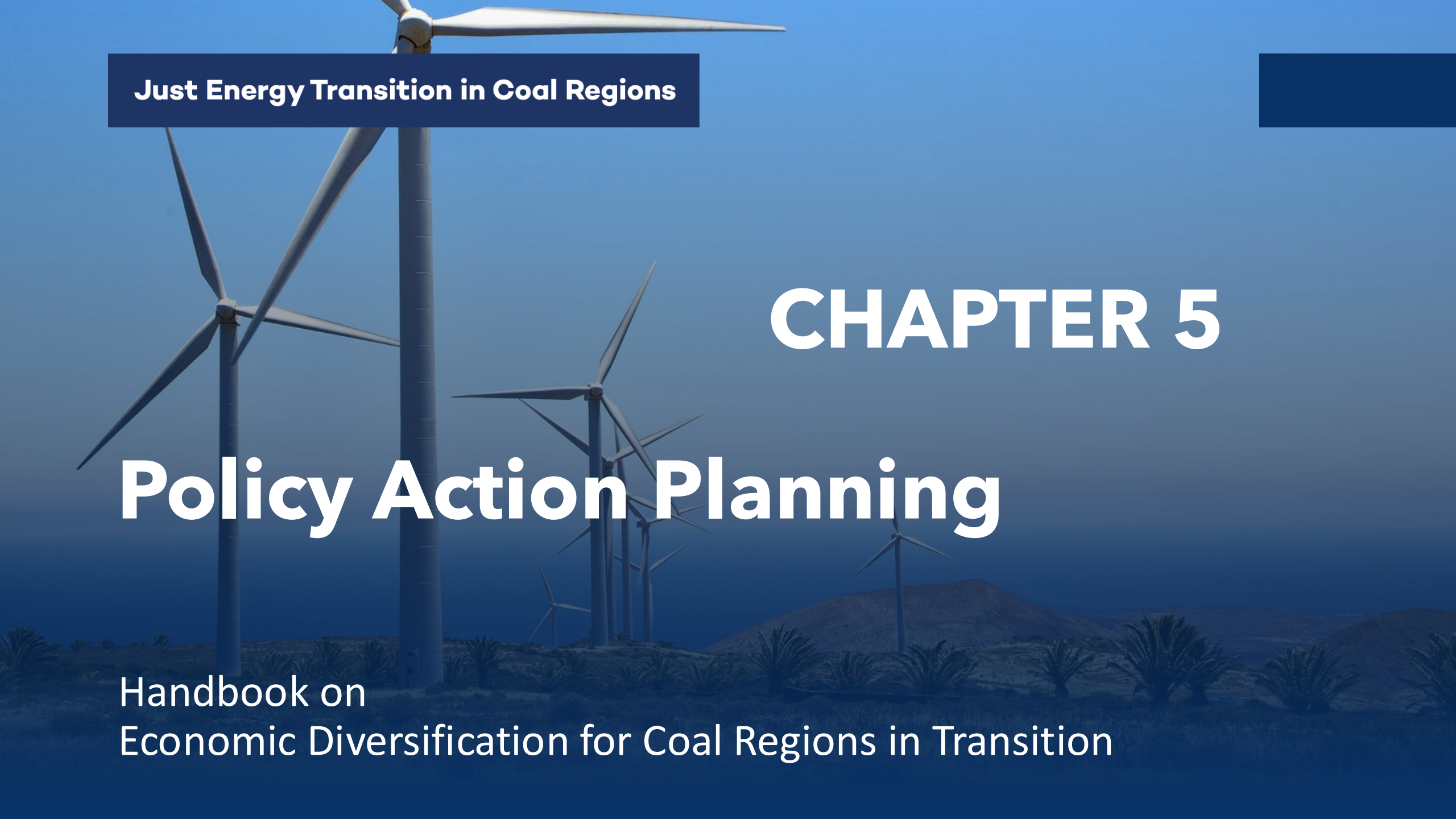
Area	No.	Criteria	Level vs potential	Type of indicator	Indicator
Job creation & quality	15	Contribution to employment generation	Level	Quantitative	Share of VC employment in total employment (%)
	16	Employment growth potential	Potential	Quantitative	Production-employment elasticities
	17	Wages growth potential	Potential	Quantitative	Exports-wages elasticities
	18	Human rights protection and decent work	Level	Qualitative	Secure safe work conditions
Social inclusion	19	Potential for social inclusion (gender)	Potential	Quantitative	Share of female employment in total VC employment (%)
	20	Potential for social inclusion (youth)	Potential	Quantitative	Share of youth employment in total VC employment (%)
	21	Potential for social inclusion (minorities)	Potential	Quantitative	Share of minorities employment in total VC employment (%)
	22	Potential for social inclusion (MSMEs)	Potential	Quantitative	Share of MSMEs participation in the VC in total enterprises (%) or Share of MSMEs sales in total VC sales (%)
Inequality reduction	23	Local community linkages	Potential	Qualitative	Possibility to engage local communities in the VC
	24	Potential for inequality reduction	Potential	Qualitative	Potential to engage poor workers/regions/entrepreneurs
	25	Social resilience contribution	Level	Qualitative	Importance for food and health security

Annex 1. Environmental dimension: criteria and indicators

Area	No.	Criteria	Level vs potential	Type of indicator	Indicator
Efficiency of resources and materials	27	Water efficiency level	Level	Quantitative	Water use efficiency
	28	Water efficiency potential	Potential	Quantitative	Distance to the world best practice
	29	Energy efficiency level	Level	Quantitative	Energy use efficiency
	30	Energy efficiency potential	Potential	Quantitative	Distance to the world best practice
	31	Material efficiency level	Level	Quantitative	Material use efficiency
	32	Material efficiency potential	Potential	Quantitative	Distance to the world best practice
Environmental pollution	33	Level of environmental pollution	Level	Quantitative	Carbon emissions intensity
	34	Waste management performance	Level	Quantitative / Qualitative	Waste generation and treatments
Circular economy strategies	35	Potential to incorporate circular strategies	Potential	Quantitative or Qualitative	Recycling rates, second life use, eco-design

Annex 1. Cross cutting-issues dimension: criteria and indicators

Area	No.	Criteria	Level vs potential	Type of indicator	Indicator
International requirements	36	Contribution to environmental commitments	Level	Quantitative	Share of environmental goods within the VC
	37	Economic, social & environmental compliance requirements	Potential	Qualitative	Information about international requirements for the VC
Adaptation practices	38	Climate change adaptation performance	Level	Qualitative	Level of VCs preparedness for climate change effects



Just Energy Transition in Coal Regions

CHAPTER 5

Policy Action Planning

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

1.1 Just Transition in coal regions
1.2 Economic diversification as a key element to prepare for a Just Transition
1.3 Economic diversification strategy design to support Just Transition
1.4 Evidence-based approach for strategy design
1.5 Multi-level coordination and collaboration for effective strategy design
1.6 Ensuring participatory strategy design

2. Elaborating a diversification diagnostic

2.1 The analytical process to assess the degree of economic diversification in coal regions
2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications
2.3 Quantitative tools to assess the degree of economic diversification in coal regions

3. Defining objectives for economic diversification strategies

3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

6. Developing a Monitoring and Evaluation (M&E) framework

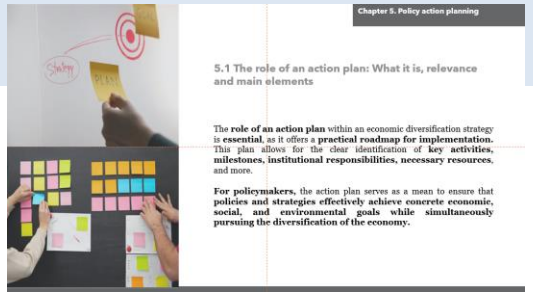
6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

Key messages

The role of an action plan: What it is, relevance and main elements

- **An action plan is an operational document** usually valid for shorter periods of time (1-2 years) that **offers clear guidance on the implementation process to support diversification**.
- It **fosters accountability** among the various stakeholders involved in the implementation phase, **takes into account resource limitations and allocations**, **communicates achievements** or the need for adaptations, and **encourages inter-institutional coordination and collaboration** throughout the process.
- **Essential elements** of an effective action plan include the **purpose, key activities, expected impact, base line and target indicators,, institutional responsibilities, budget, and timelines,** among others.

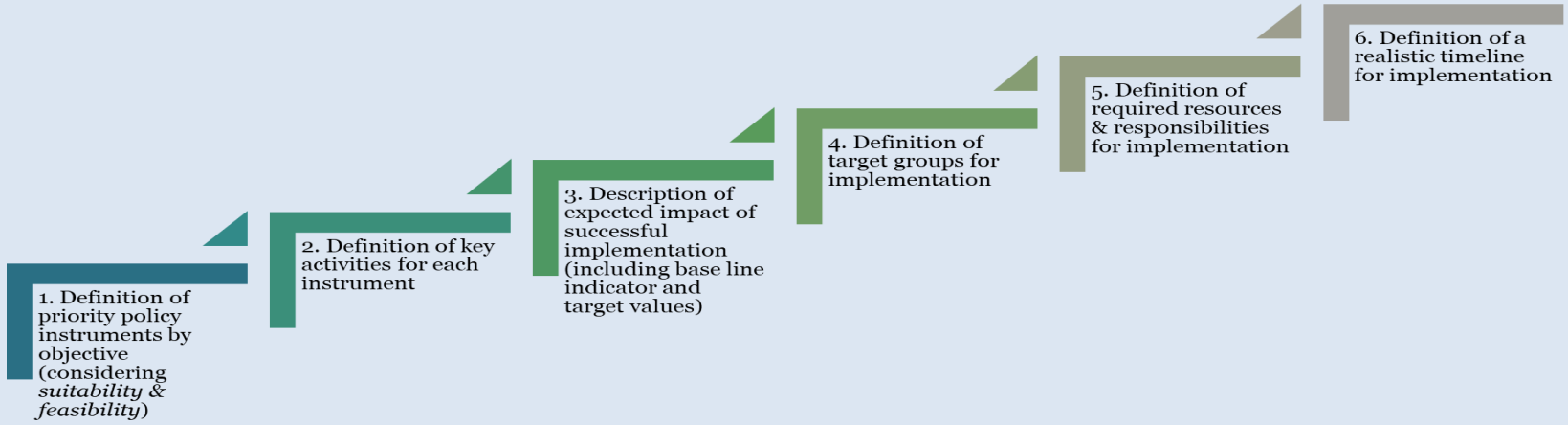
For more information on the role, purpose and elements of an action plan, refer to **Section 5.1.**



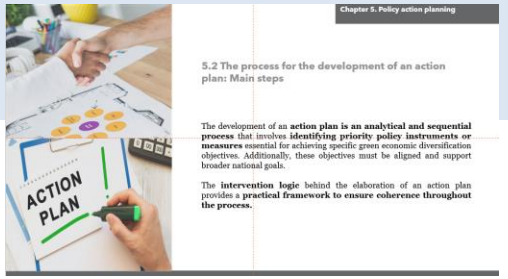
Key messages

The process for the development of an action plan: Main steps

- It involves **establishing a goal-oriented intervention logic** that enables the **definition and prioritisation of specific policy instruments** aimed at **achieving the objectives of green economic diversification**. At the same time, this intervention logic ensures that **these objectives are aligned with national goals**.
- **Following the prioritisation of instruments, several steps** must be undertaken to create an effective action plan.



For further details on the process of developing an action plan, refer to **Section 5.2**



Key messages

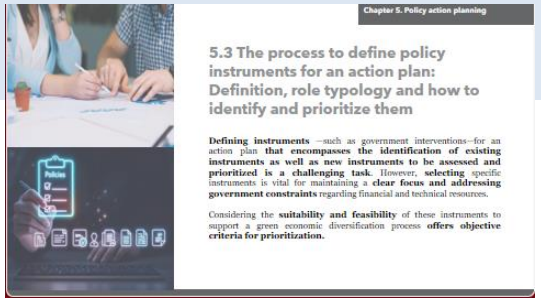
The process to define policy instruments for an action plan: Definition, role, typology and how to identify & prioritize them

- **Instruments are specific government interventions** designed to influence the behaviour of economic actors and facilitate the achievement of strategic objectives. They can be classified into **four distinct types:**

Regulations	(Dis)incentives	Information	Public goods & services
			
Formulated rules and directives that mandate economic participants to act in accordance with what is ordered in those rules or directives	The handing out or taking away of material resources to encourage certain behaviours by economic actor	The collection, dissemination and publication of information to promote economic activities	Direct public supply of or demand for goods and services, incl. through state-owned enterprises

Prioritising instruments can be challenging due to the temptation to address everything simultaneously; however, **effective prioritisation is crucial for achieving desired outcomes.** The **process of prioritising instruments** starts by creating an **inventory and identifying new instruments** that can support the objectives of green economic diversification. This prioritisation exercise could **involve two primary criteria: suitability and feasibility**.

For more information on the process of defining instruments for an action plan, refer to **Section 5.3.**



Content of Chapter 5

5.1. **The role of an action plan:** What it is, relevance and main elements

5.2. **The process to develop an action plan:** Main steps

5.3. **The process to define policy instruments for an action plan:** Definition, role, typology and how to identify and prioritize them

5.1 The role of an action plan: What it is, relevance and main elements

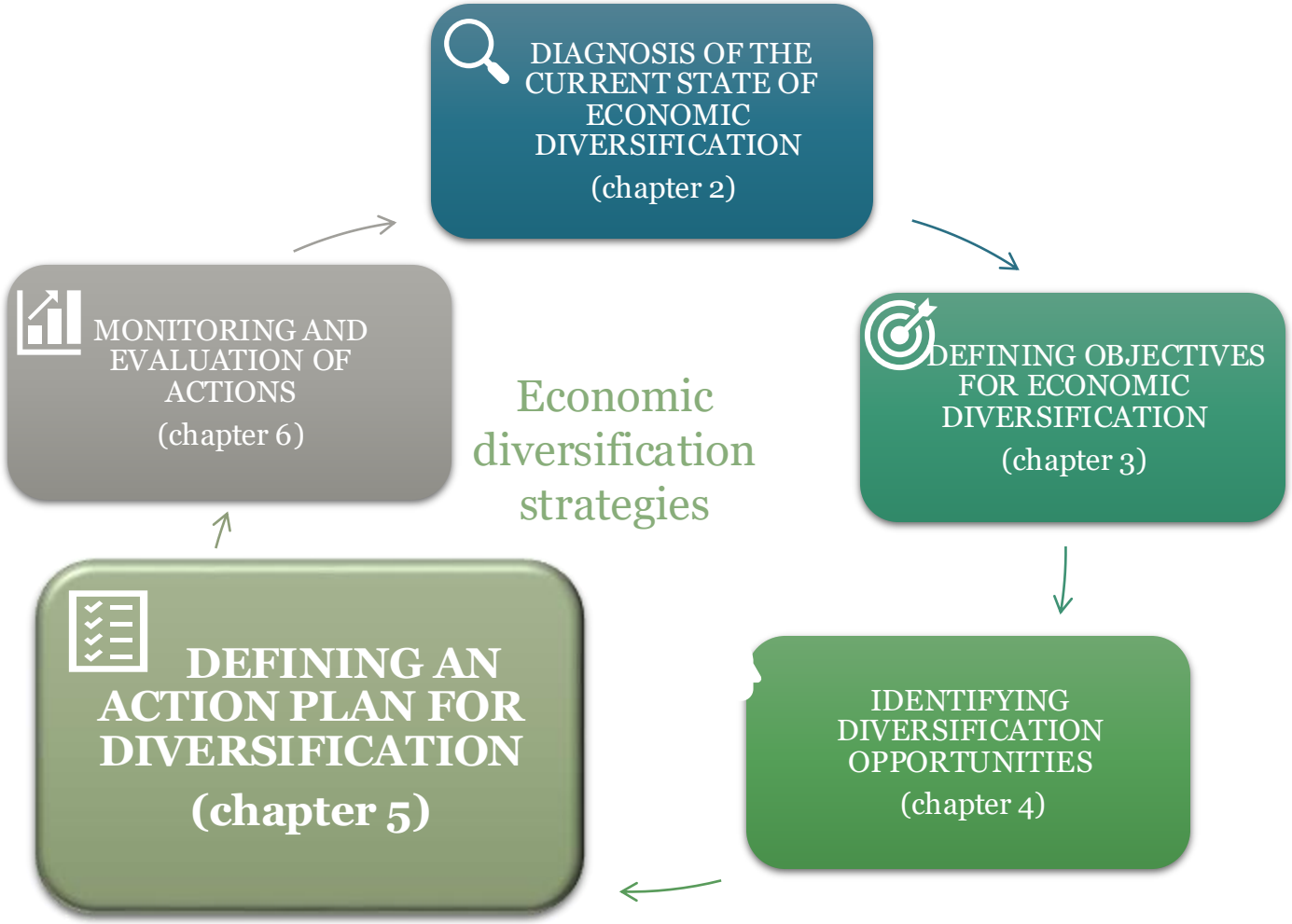
The **role of an action plan** within an economic diversification strategy is **essential**, as it offers a **practical roadmap for implementation.** This plan allows for the clear identification of **key activities, milestones, institutional responsibilities, necessary resources**, and more.

For policymakers, the action plan serves as a mean to ensure that **policies and strategies effectively achieve concrete economic, social, and environmental goals while simultaneously pursuing the diversification of the economy.**

Defining an action plan in the strategy design cycle

What is an action plan:

- Is an operational document that guides implementation based on prioritised policy instruments that must be aligned to the objectives of the strategy
- Is usually valid for shorter periods of time (1-2 years)
- Provides specific information about the prioritised policy instruments that will be implemented (e.g. purpose, institutional responsibilities, budget, timelines)



Why an action plan is useful?

An action plan plays a crucial role in the diversification process for several reasons:

1. **Clarity and Direction:** An action plan provides a clear roadmap for implementing instruments. It outlines the expected impact of each instrument, and the key steps necessary to achieve this impact, ensuring that all stakeholders understand their roles and responsibilities.
2. **Resource Allocation:** It helps in identifying and allocating the necessary resources, including time, money, and human capital, to ensure the successful implementation of the instrument.
3. **Timeline Management:** An action plan establishes timelines for the implementation of each instrument, helping to keep the initiative on schedule and ensuring timely progress toward the objective.
4. **Coordination and Collaboration:** An action plan facilitates coordination among various stakeholders, agencies, or departments involved in the instrument implementation, fostering collaboration and reducing the likelihood of duplicated efforts.

Why an action plan is useful?

An action plan plays a crucial role in the diversification process for several reasons:

5. **Evaluation and Accountability:** It includes metrics for measuring progress and assessing the effectiveness of the instrument. This allows for accountability among those involved and provides a basis for evaluating outcomes.
6. **Adaptability:** By providing a structured framework, action plans can be adjusted as needed in response to new information, changes in the environment, or unforeseen challenges
7. **Communication:** It serves as a communication tool that can help convey the strategy´s goals to all interested parties, including the public, stakeholders, and legislators, enhancing transparency.
8. **Motivation and Engagement:** A well-defined action plan can motivate and engage stakeholders and team members by clarifying how their contributions fit into the larger objective of the strategy.

Which are key elements of an action plan?

The structure of an action plan is a matrix that may include the following elements organised by policy instrument (the definition, role, typology and other aspects about policy instruments are explained in detailed in Section 5.3).

1. Policy Instrument (name)
- Official tittle

2. Strategy objective targeted by the policy instrument
- One or various objective (s) that will be supported through the instrument implementation

3. Short description of the policy instrument
- Type of instrument and its main characteristics

4. Main activities to implement the policy instrument
- Key actions that will ensure the correct instrument implementation

5. Expected impact of the policy instrument
- Expected changes because of instrument implementation

6. Base line indicator for the policy instrument
- Current value of the Indicator that allows to measure the effective implementation of the instrument

7. Target value for the policy instrument
- Expected value of the baseline indicator after instrument implementation

8. Target groups
- Sectors, size of companies, groups of the population that would be impacted by the instrument

9. Responsible implementing institution
- Institution name and responsible department

10. Supporting institutions for implementation
- Institution name and responsible department

11. Timeframe for implementation
- Start and expected completion date

12. Estimated budget
- Financial resources required for implementation

13. Funding source
- Name of the institution, organisation, agency, etc that will contribute with financial resources to support implementation

14. Additional remarks
- Any relevant info or reference/link to project details

Note: Depending on the country / region the level of detail of the action plan could differ and can include all these elements or some of them

Case study: Action plan for Eswatini

Instruments shown in the action plan support several objectives including “Enhance economic resilience by diversifying production and export products”

Instrument	Description of the instrument and expected impact	Main activities to implement the instrument	Timeframe for the implementation of the instrument	Sources to collect the instrument implementation status	Responsible institution for the implementation of the instrument	Supporting institutions for the implementation of the instrument	Estimated budget for the implementation of the instrument (local currency)
1.1 MSME Agricultural Development Fund	Incentive. Eswatini Agricultural Development Fund to boost investments in Agricultural infrastructure and capacity building	1.1.1 Develop guidelines and criteria for accessing the fund 1.1.2 Create awareness on the fund 1.1.3 Screen applications and disburse funds 1.1.4 Enforce collaboration between the agricultural fund and relevant institutions 1.1.5 Monitor and evaluate the Agricultural fund	5 years	Ministry of Agriculture Annual reports	Ministry of Agriculture	NAMBORAD, Eswatini Cotton Bord, MSME Unit, ESWADE, Development Finance Institutions	E60,000,000.00
1.2 Financial scheme with special focus on women, youth and people living with disabilities	Incentive. A targetted financial scheme that will focus on women, youth, and people living with disabilities involved in the resourced based sectors of the economy to ensure the participation of these target groups in the manufacturing sector	1.2.1 Develop guidelines and criteria for this targetted financial scheme 1.2.2 Create awareness on the scheme 1.2.3 Create awareness on the economic and social benefits of involving women, youth and people living with disabilities in the economy 1.2.4 Monitor and evaluate the finacial scheme	1 year	Ministry of Finance, Office Annual Report	Ministry of Finance	FINCLUDE, Centre for Financial Inclusion, DPM's office,Ministry of Youth, Sports and Culture,	E3,000,000.00
2.1 Industrial Platform	Information. A platform that centralizes statistical information about the trade and productive performance of the manufacturing sector of Eswatini, as well as indidicators on structural drivers that influence the level of competitiveness and indicators for market intelligence	2.1.1 Engage the Ministry of ICT on the design of the Industrial platform and define the structure of the platform 2.1.2 Identify and engage stakeholders who will provide content for the Industrial Platform 2.1.3 Hire an Industrial Statistics and Information Officer 2.1.4 Collect, compile, analyse and disseminate industrial information	1 year	MCIT Industry annual budgets and quartely reports	MCIT-Industry dept	Ministry of ICT, Public Service, National Statistics Office, Royal Science and Technology Park	E3, 000, 000.00

Source: ICR-Facility Project to support the development of a Green Industrial Policy in Eswatini

Case study: Action plan for Eswatini

Instruments shown in the action plan support several objectives including “Enhance economic resilience by diversifying production and export products”

Instrument	Description of the instrument and expected impact	Main activities to implement the instrument	Timeframe for the implementation of the instrument	Sources to collect the instrument implementation status	Responsible institution for the implementation of the instrument	Supporting institutions for the implementation of the instrument	Estimated budget for the implementation of the instrument (local currency)
6.1 Technical training for MSMEs of selected sectors to improve the quality of products and processes	Incentive. Training of MSMEs in priority/pilot sectors to ensure compliance to international standards as well as enhance Eswatini's economic resilence by enabling the diversification of production and export markets	6.1.1 Develop training module for MSME training programme on quality, standards, and conformity etc 6.1.2 Conduct a needs assesment to identify MSMEs that will be beneficiaries of the training programme 6.1.3 Perform a quality assessment of the MSME's to identify main areas of improvement 6.1.4 Create awareness on the importance of quality assurance 6.1.5 Train MSMEs on quality assurance of identified areas 6.1.6 Monitor MSME's on quality improvement	Over the 5 year period	Participants certificates; Training reports and Quarterly reports	MCIT: Regulatory and Quality Infrastructure Department (RQID) and ESWASA	SEDCO, EIPA, National Laboratory Association; FESBC; Eswatini Business;	E1 500 000.00 each year (5 years)
7.1 Green energy certification	Regulation. Issuing a green certificate to companies or individuals for generating electricity from a green resource to promote the uptake of renewable energy	7.1.1 Develop criteria for Local Green Energy Certification 7.1.2 Consult relevant stakeholders on Green Certificate development 7.1.3 Create awareness on Local green certification 7.1.4 Audit firms and companies and issuing green certificates if they comply	Continuos timeframe for green certification	Registry for Companies with green certification	Ministry of Natural Resources and Energy (MNRE), Eswatini Energy Regulatory Authority (ESERA), Renewable Energy Assosiation of Eswatini (REASWA)	MCIT, EIPA,ESWASA	E1,000,000.00
7.2 Tax incentives to businesses and individuals who invests in renewable energy projects	Regulation. A specific tax incentives for individuals and companies which aimed at the promotion of renewable energy generation in the country such as: Waiver of import duties and taxes on renewable energy equipment; VAT Refunds on renewable energy equipment; and Income "tax incentive" on companies and businesses investing in renewable energy projects, payig a lower tax than the normal corprate tax paid by other ordinary companies	7.2.1 Conduct an analysis on best practise on incentives for renewable energy 7.2.2 Design appropriate incentives to encourage and promote individuals and companies to invest in renewable enegry projects 7.2.3 create awareness on the economic, social, and environmental benefits of investing in renewable energy projects 7.2.4 Design a programme for individuals and companies to develop and present renewable energy projects	1 Financial year to develop specific tax incentive for Renewable Energy	Customs data (ERS)	Ministry of Finance, Eswatini Revenue Services, Eswatini Energy Regulatory Authority	MCIT, EIPA	E1,500,000.00

Source: ICR-Facility Project to support the development of a Green Industrial Policy in Eswatini

5.2 The process for the development of an action plan: Main steps

The development of an **action plan is an analytical and sequential process** that involves **identifying priority policy instruments or measures** essential for achieving specific green economic diversification objectives. Additionally, these objectives must be aligned and support broader national goals.

The **intervention logic** behind the elaboration of an action plan provides a **practical framework to ensure coherence throughout the process.**

EQuIP facilitating the elaboration of an action plan as part of a strategy development process

As highlighted in Chapter 1, the EQuIP toolkit encompasses different toolboxes with quantitative methodologies to assess industrial, social and environmental performance, as well as one specific toolbox to **guide the formulation and design of a transformative policy / strategy package for inclusive and sustainable industrial development.** See the toolbox here: EQuIP Toolbox E: Designing a transformative industrial policy package.

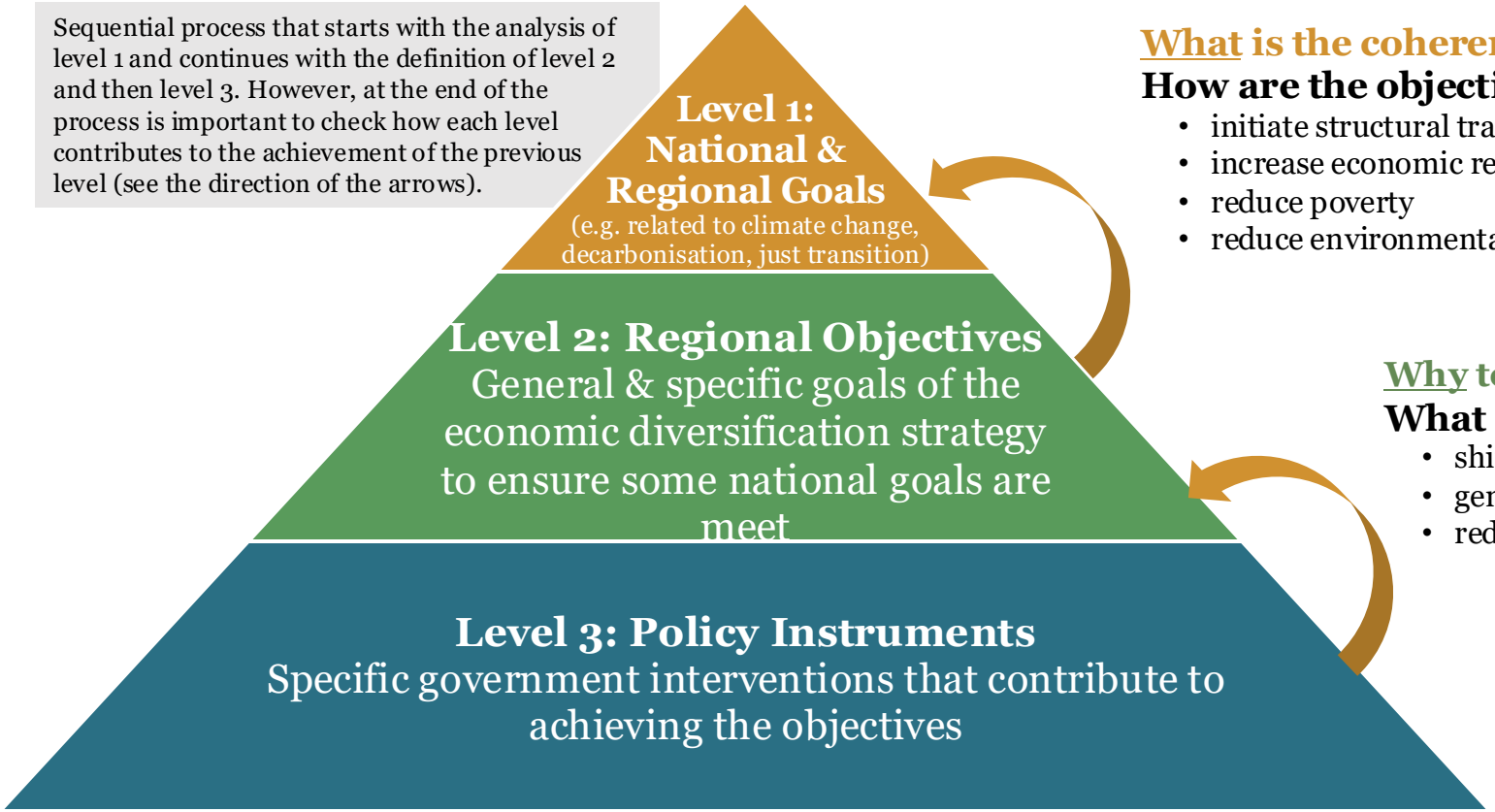
This last EQuIP toolbox introduces an **intervention logic** that provides a framework to establish industrial policy objectives, intervention areas and policy instruments **that can be adapted for an economic diversification strategy**.

The **adapted intervention logic for an economic diversification strategy** introduced in Chapter 3 is presented in the next slide. showing that specific objectives to support economic diversification need to be aligned to national/regional goals to ensure policy coherence (i.e. relation between level 1 and 2 is developed in detail in Chapter 3 of this handbook) and that concrete policy instruments must contribute to the achievement of these objectives to guarantee that government interventions are goal-oriented (i.e. relation between level 2 and 3 is developed in section 5.3 of this Chapter).

Concrete and prioritised policy instruments constitute the basis to develop the action plan with the elements described in slide 12.

Goal-oriented intervention logic to derive an action plan for economic diversification

Sequential process that starts with the analysis of level 1 and continues with the definition of level 2 and then level 3. However, at the end of the process is important to check how each level contributes to the achievement of the previous level (see the direction of the arrows).



What is the coherence of the Economic Diversification Strategy?

How are the objectives aligned to national and regional goals?

- initiate structural transformation process
- increase economic resilience
- reduce poverty
- reduce environmental damage (e.g. decarbonisation)

Why to pursue an Economic Diversification Strategy?

What are the key objectives a region wants to achieve?

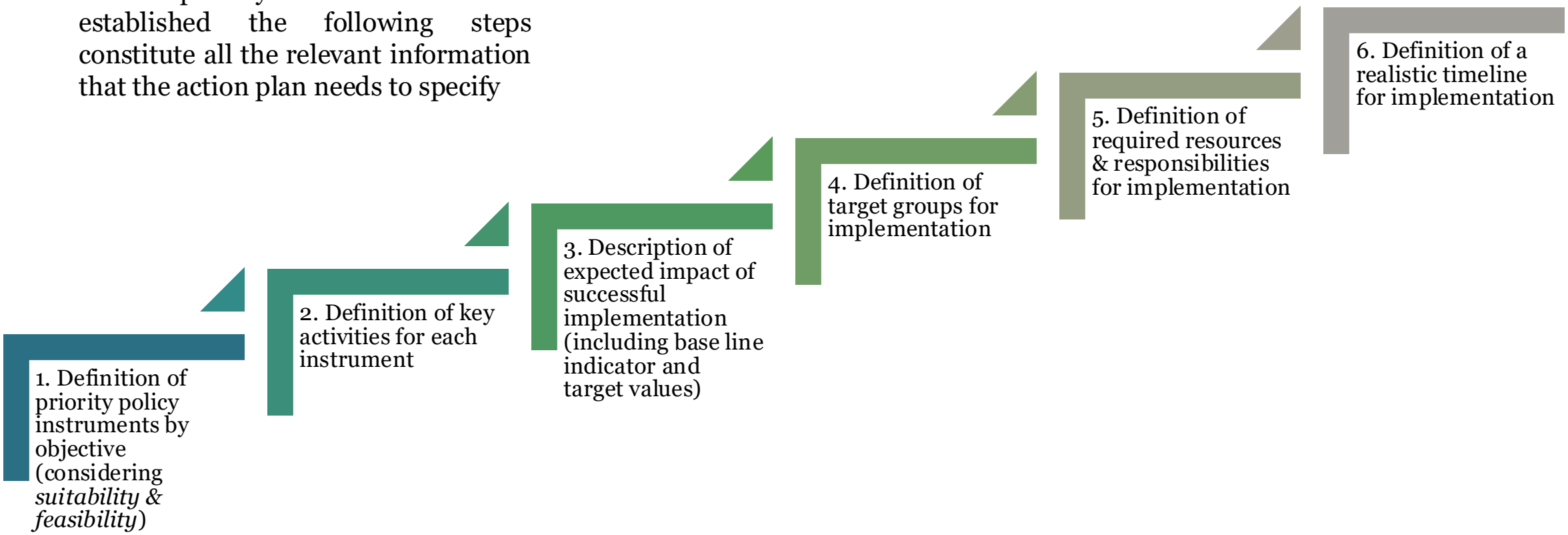
- shift to more sophisticated sectors and value-added products
- generate quality employment
- reduce emissions

How will the local government intervene to support the achievement of regional objectives?

- Establish different types of instruments (e.g. regulations; incentives; information; public ownership)

Steps to elaborate an action plan

Once priority instruments are established the following steps constitute all the relevant information that the action plan needs to specify



Participatory process: These sequential steps to build an action plan requires the development of participatory workshops with all the institutions responsible directly or indirectly for its implementation

5.3 The process to define policy instruments for an action plan: Definition, role, typology and how to identify and prioritize them

Defining instruments — such as government interventions — for an action plan **that encompasses the identification of existing instruments as well as new instruments to be assessed and prioritised is a challenging task**. However, **selecting** specific instruments is vital for maintaining a **clear focus and addressing government constraints** regarding financial and technical resources.

Considering the **suitability and feasibility** of these instruments to support a green economic diversification process **offers objective criteria for prioritisation.**

Definition and role of policy instruments

Definition
Specific government interventions (tools and measures) that influence the behaviour of economic actors and, thereby, affect performance outcomes in the business sector and contribute to the achievement of strategy objectives.

The role of policy instruments

- Provide a concrete channel for government action
- Change the behaviour of certain groups
- Support economic, social an environmental transformation

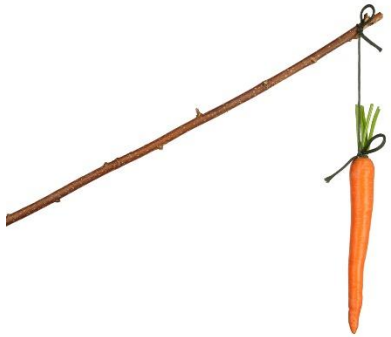
Policy instrument typology

There are four types of instruments that governments implement to influence the behaviour of actors in the economy

Regulations

Formulated rules and directives that mandate economic participants to act in accordance with what is ordered in those rules or directives

(Dis)incentives



The handing out or taking away of material resources to encourage certain behaviours by economic actor

Information

The collection, dissemination and publication of information to promote economic activities

Public goods & services

Direct public supply of or demand for goods and services, incl. through state-owned enterprises

For a deeper explanation of different type of policy instruments got to: EQuIP Toolbox E: Designing a transformative industrial policy package.

Examples of instruments to support economic diversification in coal regions

Instruments in the table are classified by type and shown as examples for key areas to support economic diversification

AREAS OF SUPPORT		TYPE OF POLICY INSTRUMENTS			
	Perspective	**(Dis) Incentives**	**Regulations**	**Information**	**Public goods & services**
Green Finance	Support sustainable finance infrastructure, investment, and green technologies Provide guidance for the financial ecosystem	• Low interest green loans or green grants for value chain development program	• Preventing green washing regulation • Green taxonomy	• Map of actors in the financial sector and green financing solutions	• Blended finance mechanisms (combined public and private capital to finance green projects)
Sustainable Infrastructure	Support renewable energy infrastructure	• Subsidies for renewable energy infrastructure	• Infrastructure law	• Green infrastructure guide	• Public renewable energy investment
Sustainable Investment	Promote investment on renewable energy and low-carbon technology	• Feed-in Tariffs (guaranteed rates to renewable energy investment)	• Public-private partnership law to encourage sustainable investment	• Investment guidelines	• Public/private joint ventures • Public venture capital fund
Technical and Vocational Education Training (TVET)	Identify green skills needs in growing green sectors as renewable energy, energy efficiency, circular economy, decarbonisation processes	• Develop green training courses for green jobs together with business • Scholarships for green skills training • Employer training grants for reskilling/upskilling in sustainable practices	• Legal framework for green skills in TVET curricula	• Labor market gap assessment on green skills	• Publicly funded research and training centres

Examples of instruments to support economic diversification in coal regions

Instruments in the table are classified by type and shown as examples for key areas to support economic diversification

AREAS OF SUPPORT		TYPE OF POLICY INSTRUMENTS			
	Perspective	**(Dis) Incentives**	**Regulations**	**Information**	**Public goods & services**
Green Technologies	Shift towards low-carbon technologies	• Tax exemptions to adopt low-carbon technologies	• Emissions Reduction Law for green tech	• Green technology solution platform • Green cluster agencies to promote innovations in the regions	• Business incubator to develop green value chains
Green International Trade	Open international markets for green products and deepening existing trade relations	• Export consortium program for new green products • Tax rebate for low- carbon products • Subsidies for exporters of green goods • Export credit and insurances	• Net zero certifications • Green standards (ISO 14067-for carbon footprint assessment)	• Market intelligence study for new green products • Carbon footprint labelling system • Trade fair of low carbon products	• Carbon-Neutral Export Processing Zones (eco industrial parks)
Green Domestic Demand	Shift production and consumption patterns towards low-carbon products and materials	• Supplier development program for sustainable production • Tax credits for low-carbon products or materials • Import duties and quotas	• High -carbon product and material bans	• Public awareness & education campaigns for sustainable demand	Public procurement of low emission products

What does EQuIP foresee and recommend to identify instruments? (I)

- Level 3 of the intervention logic is about **considering** different **instruments (existing and new) that contributes to the regional economic diversification** and then **selecting the most suitable** and promising ones for implementation

- Instrument identification involves
  - **evaluating the current instrument inventory** (i.e. the list of instruments that is already implemented)
  - **considering** the deployment of **new instruments**.

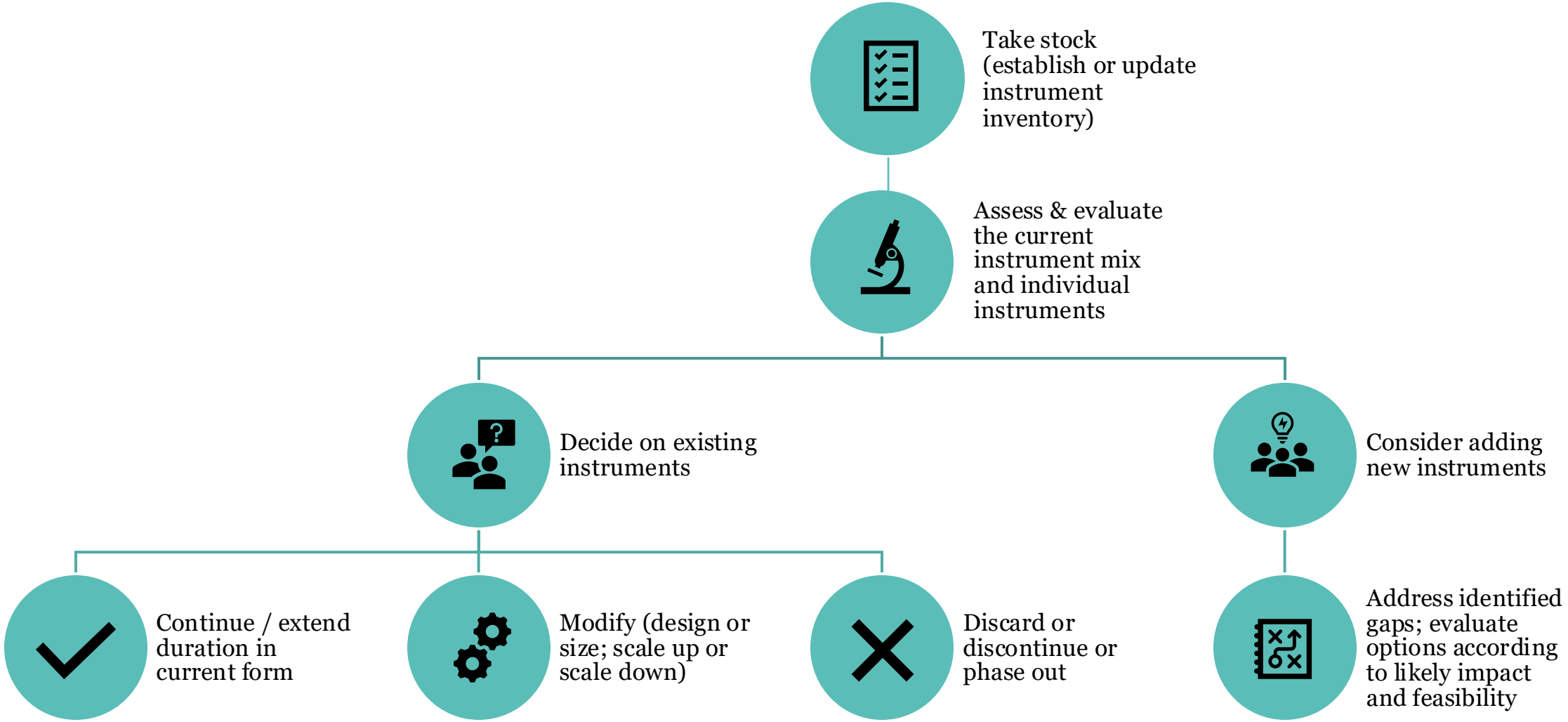
- The existing **instruments need to be comprehensively mapped and** then **assessed** against
  - **how "goal-oriented"** they are, i.e. how likely they are to effectively contribute to the green economic diversification strategy objectives, and
  - **how coherent** they are as a package. This part of the assessment is about understanding how well the current "instrument mix" fits together and about **highlighting potential or observed synergies, redundancies and trade-offs** between individual instruments. This mapping and evaluation of the current instrument package helps to decide which of the instruments that are already used will be continued, scaled up, modified or phased out.

- This mapping (in an "**instruments inventory") facilitates the identification of gaps**. For example, it may become clear that:
  - …many instruments are oriented towards one **particular objective** while there are few or no instruments focused on other objectives
  - …**certain types** of instruments are underrepresented in the current instrument mix.

What does EQuIP foresee and recommend to identify instruments? (II)

- Such gap analyses (using an “instruments inventory”) can **support the identification of possible new instruments** for adoption.
- However, financial, institutional & time constraints need to be considered **when choosing new instruments.**
- The **ultimate decision** will be **guided by** the instrument’s **likely**
  - **impact** (contribution to strategy specific objectives and major goal of green economic diversification) and
  - **feasibility** (in terms of monetary costs, administrative capacities and expertise, time horizon, stakeholder buy-in).

Summary: process of identifying instruments



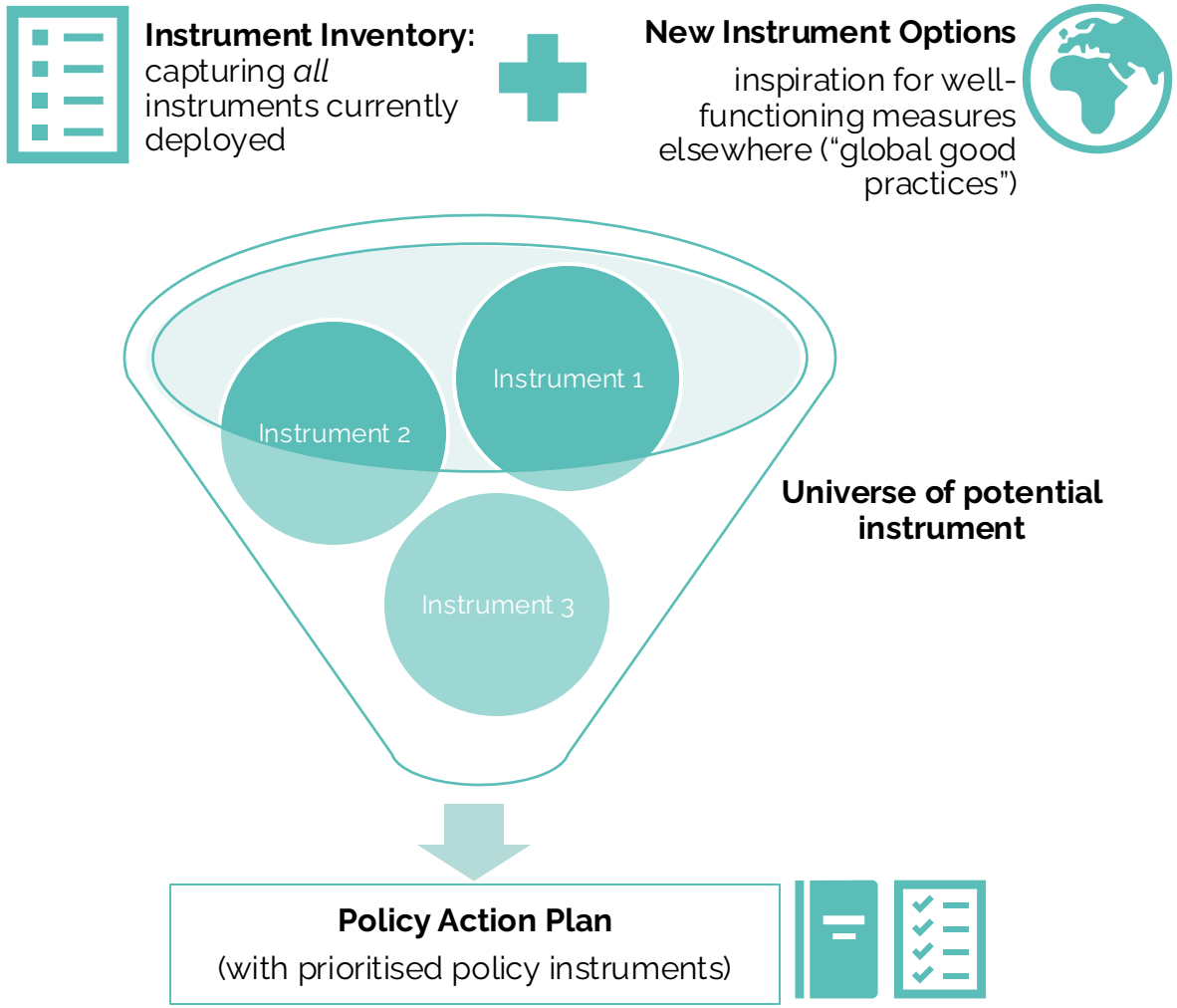
Note: See Annex 1 for a process to compile and effective package of instruments (instrument inventory + new instruments)

Why to prioritize instruments for an action plan

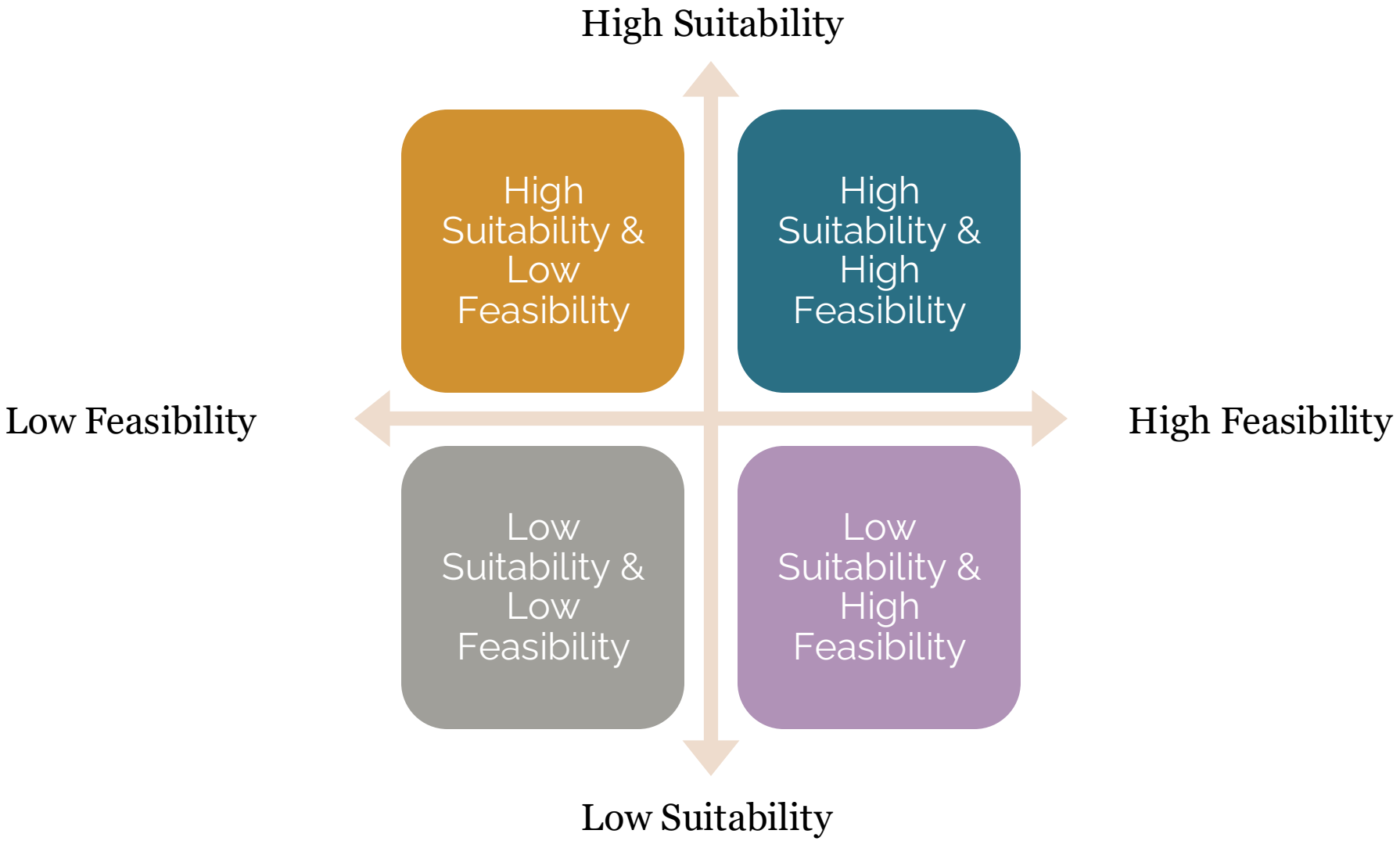
Selecting instruments is not easy. There is a temptation to do everything at the same time. However, prioritisation is crucial to attempt effectiveness.

- **Clear focus and compass.** Selected instruments need to target concrete country's objectives/priorities and specific sectors and groups of the population

- **Resource constraints.** Government has restricted financial and technical resources to attend all needs.



How to prioritize instruments for an action plan: Use two criteria - suitability & feasibility



How to assess suitability and feasibility

Suitability

"Which instruments are most strategic to achieve our objectives?"

- The instrument is the most important intervention to achieve the key objective
- There is no risk that the instrument will have a bad impact
- The instrument will also strongly contribute to another policy objective (*synergy*)
- The instrument will not negatively affect ay other policy objective (*no trade-off*)

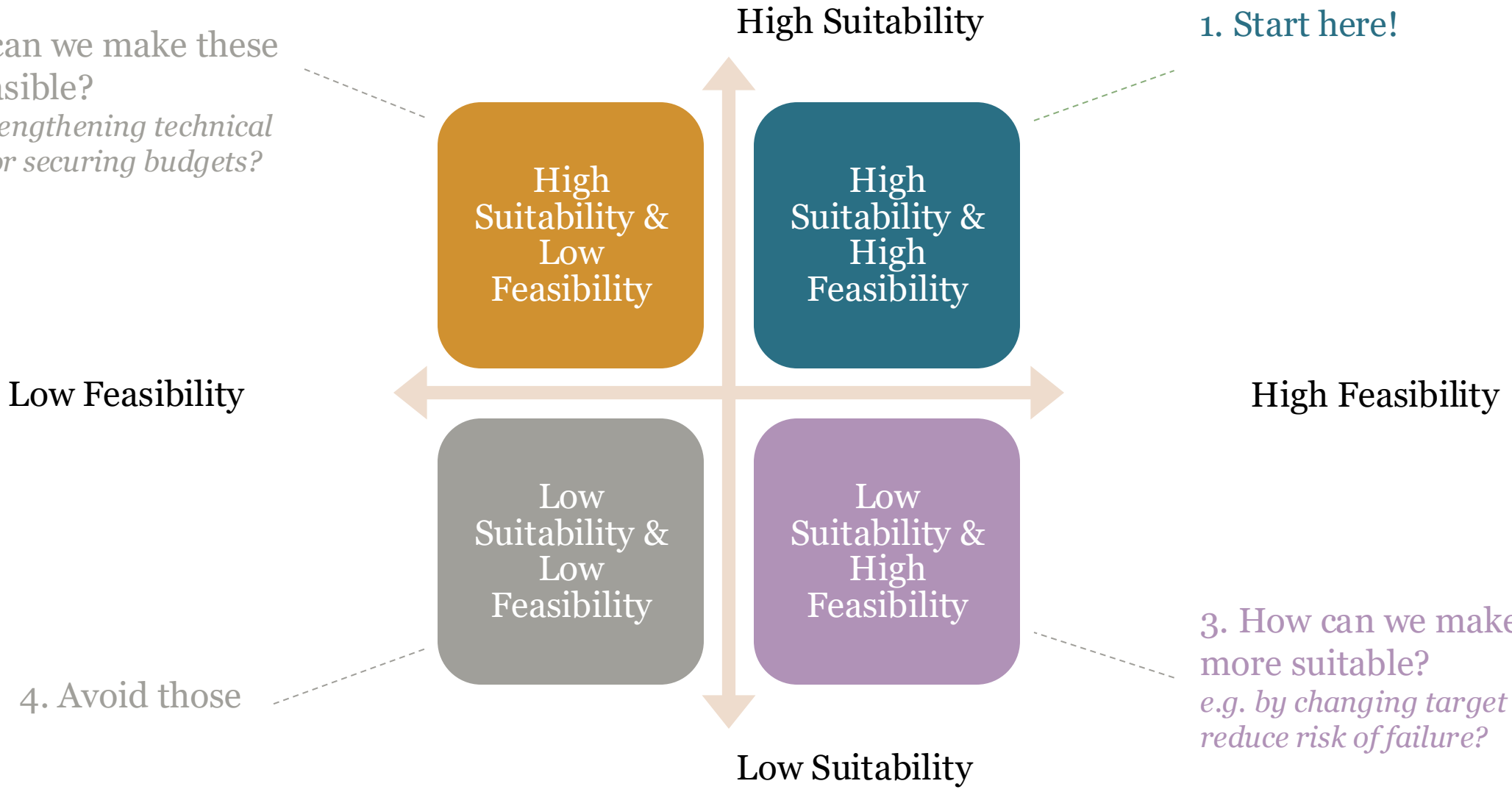
Feasibility

"Do we have the required capacities to implement the instrument?"

- Institutional capacities to effectively implement/enforce the instrument
- The required time-horizon for the instrument
- Monetary cost of instrument (How high is the cost for implementation?)
- Political support for green economic diversification initiatives
- Stakeholder buy-in for instrument
- The perceived legitimacy of government to intervene in economic activities

Prioritisation decisions

2. How can we make these more feasible?
e.g. by strengthening technical capacity or securing budgets?



1. Start here!

4. Avoid those

3. How can we make these more suitable?
e.g. by changing target group or reduce risk of failure?

Annex 1: 5-step process to compile an effective package of IP instruments

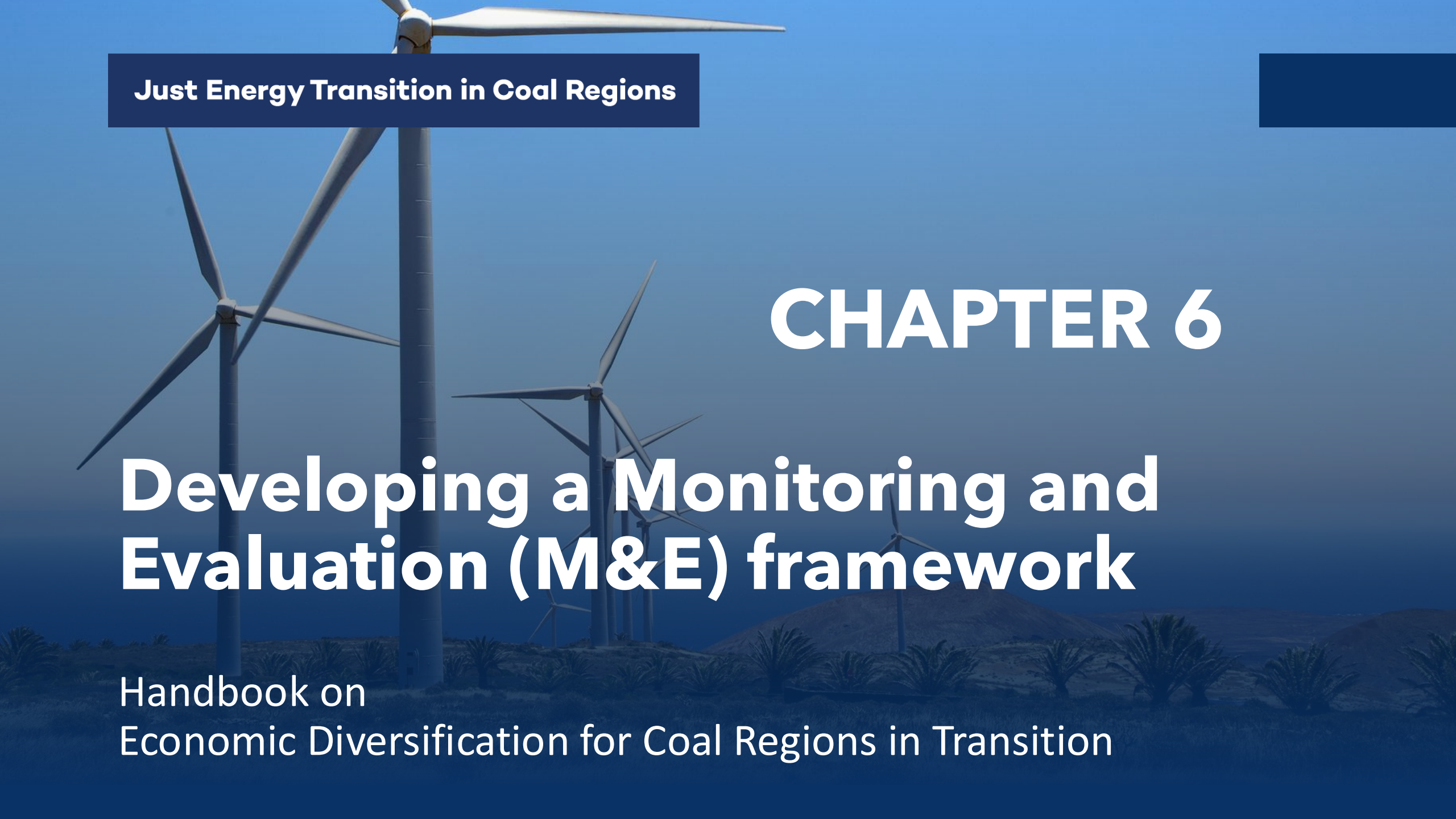
Step 1. Map all relevant institutions that implement industrial policy instruments			
Government Departments	Specialised agencies	Chambers/ industry associations	Donors

Step 2. Map all relevant instruments you are aware of (for the selected objectives and intervention areas)			
Regulations	(Dis)incentives	Information	Public goods & services

Step 3. Identify and propose new instruments that relate to the intervention logic (selected objectives and intervention areas)			
Regulations	(Dis)incentives	Information	Public goods & services

Step 4. Schedule a meeting/interview with relevant institutions to request more information to complement the mapping			
Why this instrument?	What is an instrument?	Request information in the interview or provide a template to complete	Agree on provision of information

Step 5. Review and consolidate the information received from all institutions and **make a selection/prioritisation**			
Are these really instruments?	Are they working/could they work?	Duplications?	Inconsistencies?



Just Energy Transition in Coal Regions

CHAPTER 6

Developing a Monitoring and Evaluation (M&E) framework

Handbook on
Economic Diversification for Coal Regions in Transition

The content of the handbook

1. Setting the scene and conceptual considerations

1.1 Just Transition in coal regions
1.2 Economic diversification as a key element to prepare for a Just Transition
1.3 Economic diversification strategy design to support Just Transition
1.4 Evidence-based approach for strategy design
1.5 Multi-level coordination and collaboration for effective strategy design
1.6 Ensuring participatory strategy design

2. Elaborating a diversification diagnostic

2.1 The analytical process to assess the degree of economic diversification in coal regions
2.2 Indicators to assess the degree of economic diversification in coal regions and social and environmental implications
2.3 Quantitative tools to assess the degree of economic diversification in coal regions

3. Defining objectives for economic diversification strategies

3.1 Policy objectives for economic diversification strategies
3.2 Goal-oriented intervention logic to guide the definition of policy objectives

4. Identifying economic diversification opportunities

4.1 Main methods to identify diversification opportunities to phase-out coal
4.2 Quantitative tools to identify economic diversification opportunities
4.3 Qualitative tools to identify economic diversification opportunities

5. Policy action planning

5.1 The role of an action plan
5.2 The process to develop an action plan
5.3 The process to define policy instruments for an action plan

6. Developing a Monitoring and Evaluation (M&E) framework

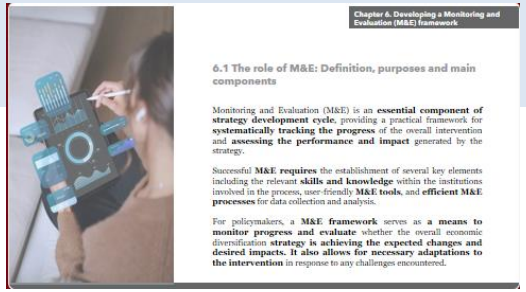
6.1 The role of M&E
6.2 M&E tools and steps to build an M&E framework
6.3 Choosing indicators and target-setting for M&E

Key messages

The role of M&E: Definitions, purposes and main components

- Monitoring and Evaluation (M&E) is an essential component of strategy design cycle, providing a practical framework for systematically tracking the progress of the overall strategy and concrete policy instruments, as well as assessing the performance and impact generated by the intervention.
- The primary purposes of M&E are to support informed decision-making, foster accountability and legitimacy among the public and partners, and preserve institutional memory.
  - ✓ **Monitoring.** Focuses on ensuring that a policy instrument is implemented correctly,
  - ✓ **Evaluation.** Assesses whether the strategy is utilising the appropriate policy instrument to achieve the desired impact.
- An effective **M&E system** comprises **three main components**: the application of specific skills and knowledge from the institution leading the process, the use of appropriate M&E tools, and the establishment of various processes within line ministries and other institutions responsible for implementing the strategy.

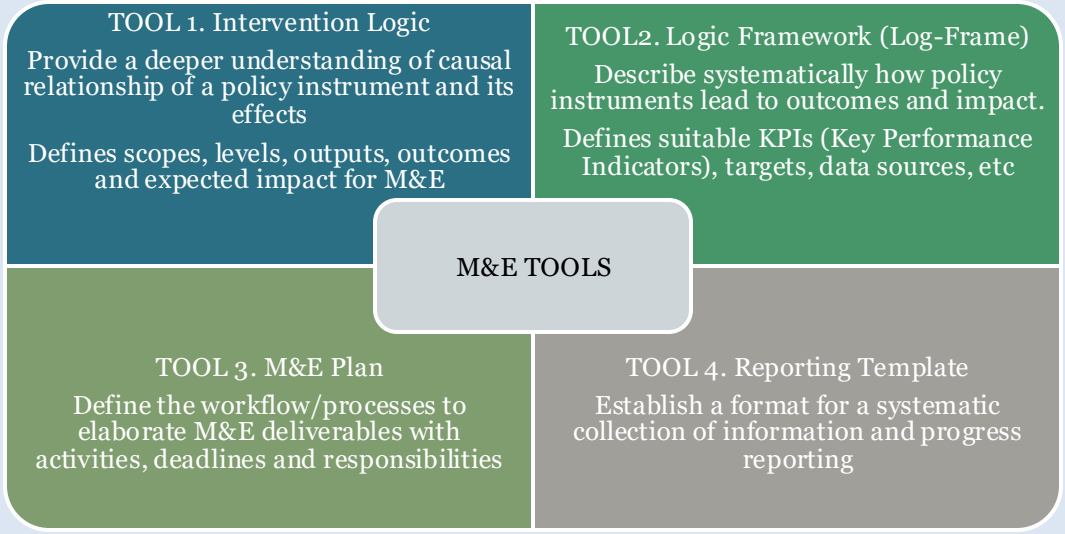
For more information on the definitions, purposes, key differences, and essential components of M&E, please refer to **Section 6.1.**



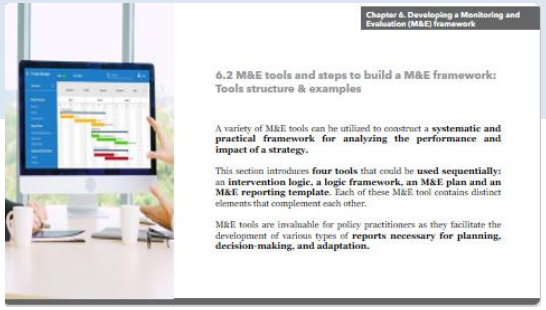
Key messages

M&E tools and steps to build a M&E framework: Tools structure & examples

- A range of M&E tools can be employed to establish a systematic and practical framework for analysing the performance and impact of a strategy. Four distinct yet complementary tools can be utilised in the M&E process. Tools 2, 3 and 4 support the operationalisation of the intervention logic.



For more detailed information on the M&E tools, guidance on developing an M&E framework, and specifics on impact evaluation as a key purpose of an M&E framework, please refer to Section 6.2.



Key messages

Choosing indicators and target-setting for M&E: What is an indicator and alternative scenarios for target-setting

- Choosing the **right indicators** and **setting appropriate targets** are essential components of an M&E process. **Appropriate indicators** ensure that measurements are directly aligned with the outcomes and outputs of the intervention, providing relevant data that accurately reflects progress. **Setting targets** establishes clear, quantifiable expectations for what the intervention aims to achieve, facilitating better planning and execution. The role of target setting can be summarised as:

Targets define "***where we want to go and how fast***"

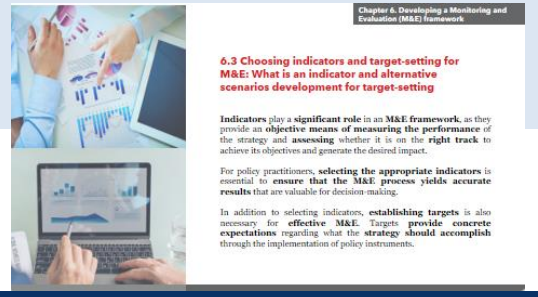
They allow us to **track progress**

Monitoring targets continuously over time provides an "**early warning system**"

This allows the **dynamic adaptation** of policy planning and implementation

- To support this process, scenario analysis can be particularly beneficial, as it offers projections for various potential future development paths, such as business-as-usual, best-case, and worst-case scenarios.

For further information on selecting indicators and target-setting for effective M&E, please refer to Section 6.3.



Content of Chapter 6

6.1. **The role of M&E:** Definitions, purposes and main components

6.2. **M&E tools and steps to build a M&E framework:** Tools structure & examples

6.3. **Choosing indicators and target-setting for M&E:** What is an indicator and alternative scenarios development for target-setting

6.1 The role of M&E: Definition, purposes and main components

Monitoring and Evaluation (M&E) is an **essential component of strategy development cycle**, providing a practical framework for **systematically tracking the progress** of the overall intervention and **assessing the performance and impact** generated by the strategy.

Successful **M&E requires** the establishment of several key elements including the relevant **skills and knowledge** within the institutions involved in the process, user-friendly **M&E tools**, and **efficient M&E processes** for data collection and analysis.

For policymakers, a **M&E framework** serves as **a means to monitor progress and evaluate** whether the overall economic diversification **strategy is achieving the expected changes and desired impacts. It also allows for necessary adaptations to the intervention** in response to any challenges encountered.

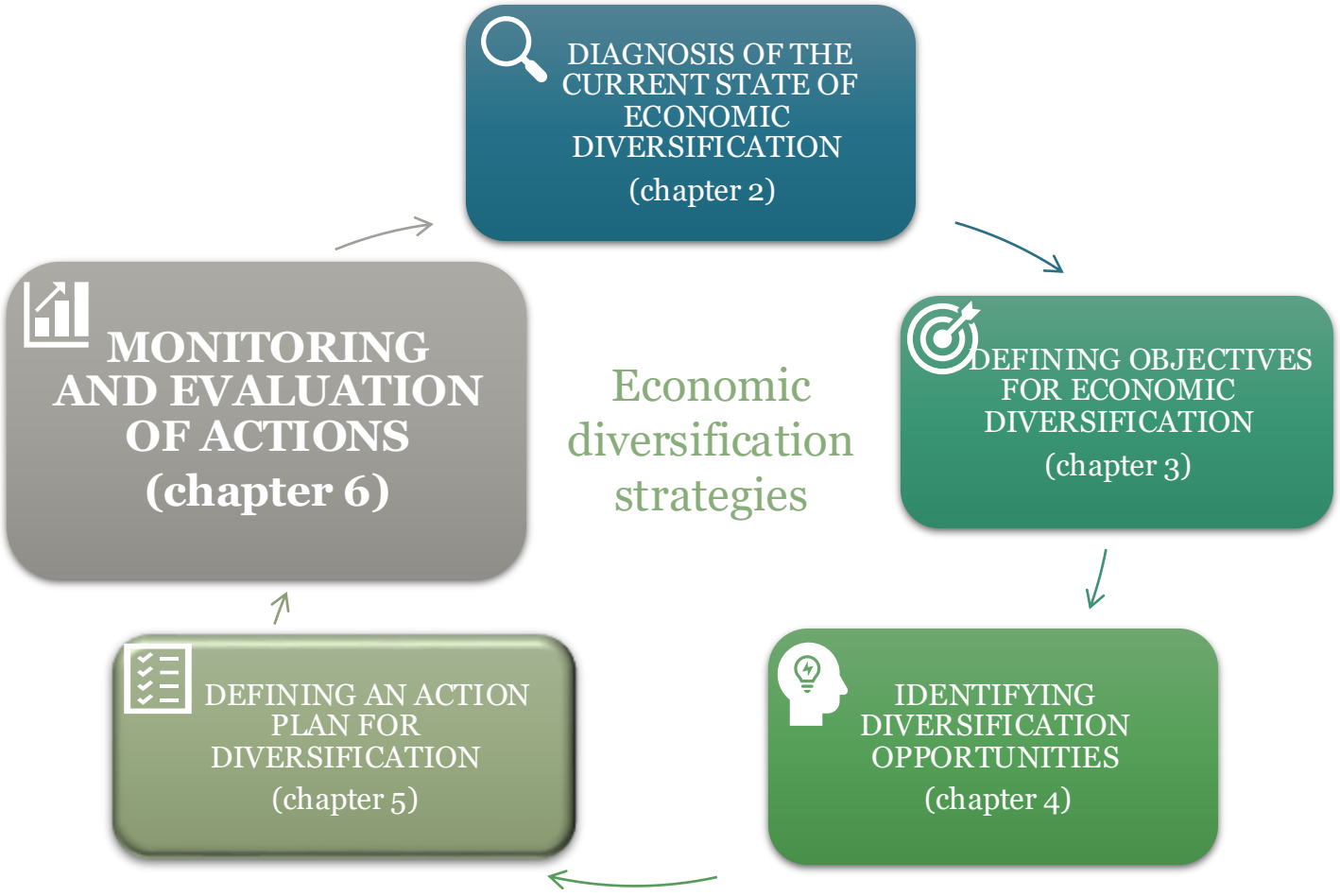
Developing and M&E framework in the strategy design cycle

What is M&E?

It is a **critical component of a strategy design cycle** as it **provides a framework for systematically:**

1) tracking the progress of the intervention against the objectives and targets spelled out in the strategy

2) assessing the **performance and outcomes** of the overall strategy and actions (policy instruments) for impact evaluation



General purposes of monitoring and evaluation?

Promote informed decision-making
- assess ongoing instruments (on track?)
- plan/revision/adaptation/discontinuation of instruments
- allow experimentation and constant learning

Creates accountability and legitimacy vis-à-vis the public and partners
- measure the degree of success or failure
- assess effective and efficient use of resources
- provide transparency for taxpayers, donors and partners

Preserves institutional memory
- allow to know what has been done in the past
- provide information about effectiveness of instruments

Specific definition and purpose of monitoring and evaluation

Monitoring

- **Definition:** Monitoring is the ongoing process of collecting, analysing, and using information (data) to track a strategy's or instrument's progress toward its goals. It involves regular observation and recording of strategy (or instrument) activities and their results.
- **Purpose:** The primary purpose of monitoring is to provide instrument managers and stakeholders with timely information on progress and success and to identify any issues that may require corrective action. It also helps ensure that the strategy or instrument stays on track, within budget, and on time.

Evaluation

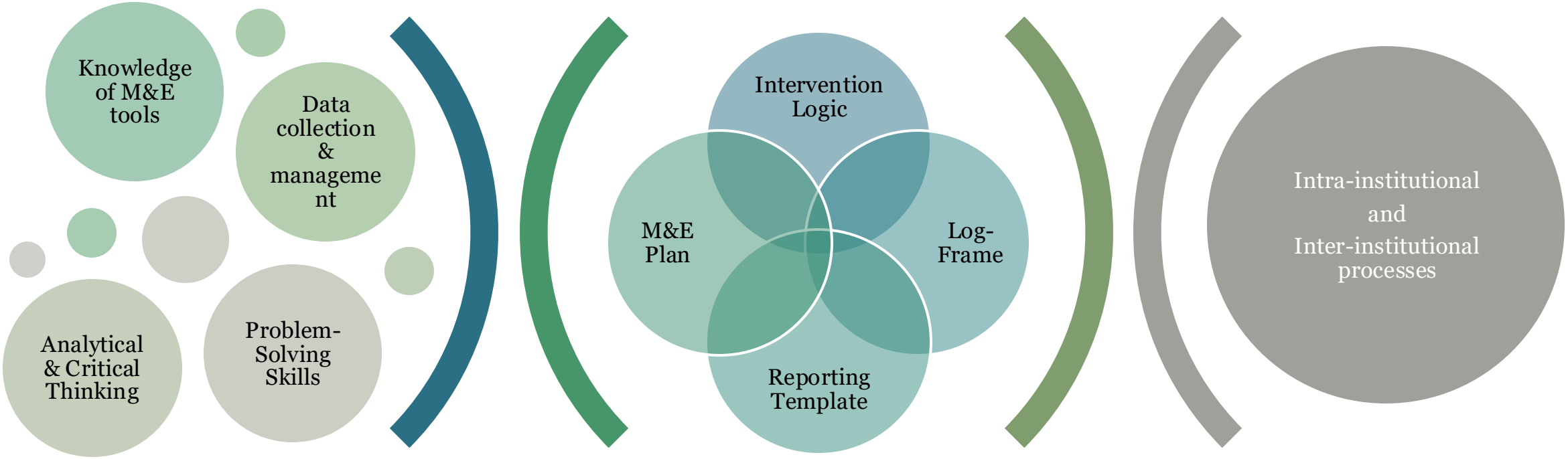
- **Definition:** Evaluation is a systematic assessment of a strategy´s or instrument's design, implementation, and outcomes. It is usually conducted at specific points in the project lifecycle, such as mid-term or at the end.
- **Purpose:** The main purpose of evaluation is to determine the relevance, effectiveness, efficiency, impact, and sustainability of a strategy or instrument. Evaluation help stake-holders understand the value of the strategy or instrument, to learn from its successes and failures, and to draw lessons for future undertakings.

Overview of main differences between monitoring and evaluation

	Monitoring	Evaluation
Focus	Are we implementing the instrument right?	Are we implementing the right instrument?
Usefulness	Analysis of how well an instrument is performing against expected timelines and results.	Assessment of an ongoing or completed instrument to analyse its impact but also its relevance, logic, side effects
Relevant questions	• Are we doing the work we planned? • Are we getting the results we thought we'd get? • Is the instrument on plan and on budget?	• How effective is our instrument? • Is our instrument sustainable? • What are factors hampering success?
Position in the strategy cycle	During instrument implementation	At a precise moment during instrument implementation and at the end of the intervention.
Time	Ongoing, routine	Periodic (e.g. annual, mid-term, final evaluation)
Result	Preventing actions to guarantee expected results	Lessons learned for the decision-making / planning process.
	Thinking within the box of the instrument!	**Thinking out of the box of the instrument!**

Typical components of a monitoring and evaluation system

An effective deployment of a M&E system involves the use of specific skills & knowledge from the institution leading the process, the application of M&E tools, and the establishment of different processes (within line ministries and other institutions also responsible for the implementation of the strategy).



M&E skills & knowledge

M&E tools

M&E processes

Note: Refer to the following 3 slides for more details.

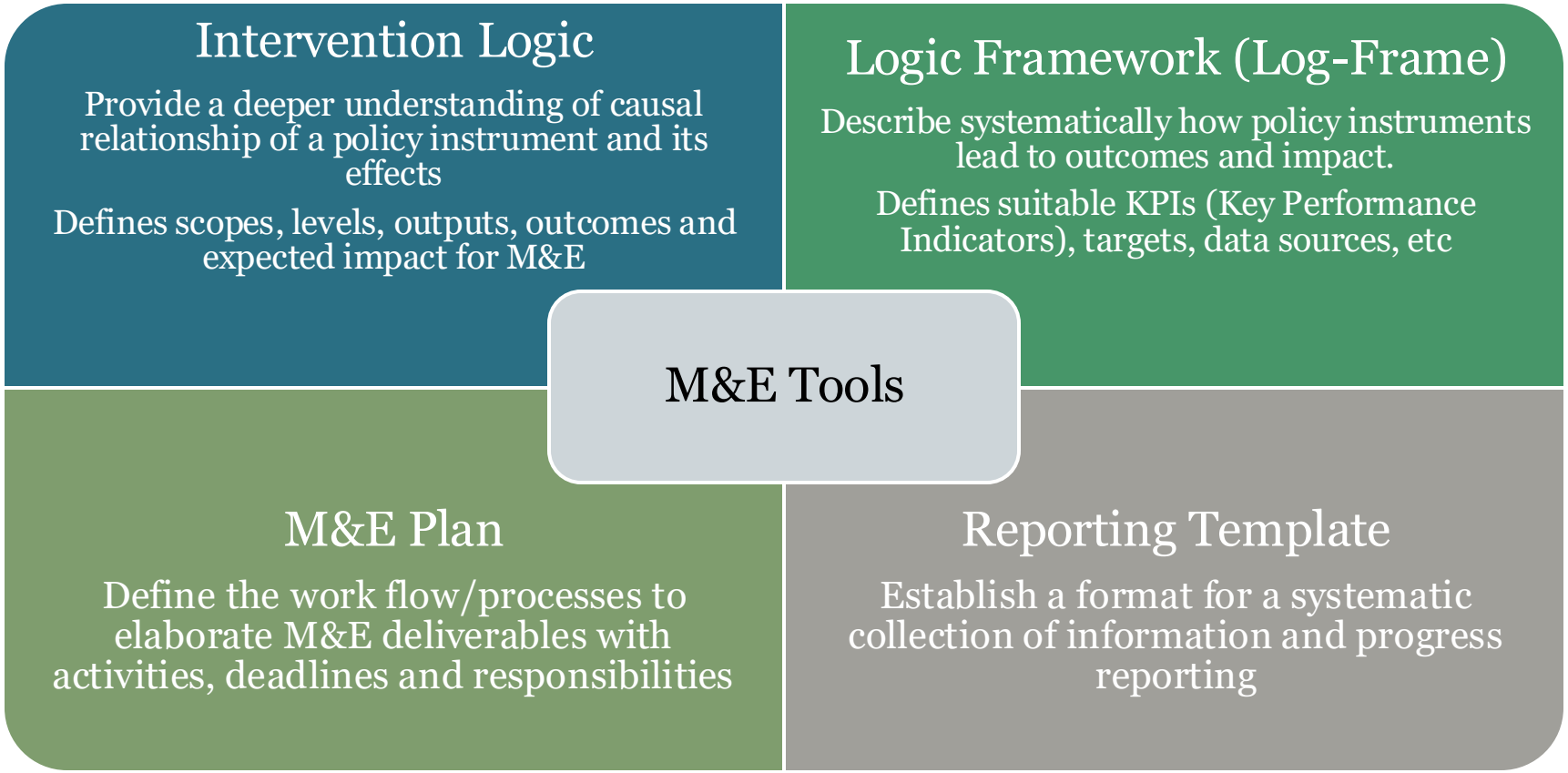
What are key skills and knowledge for M&E ?

When establishing a M&E framework is important to ensure that basic skills and knowledge exists or is strengthened in the institution leading the process. The following table highlights key elements.

M&E skills and knowledge	Description
Knowledge of M&E tools	Familiarity with various M&E tools, how to design them, their approach and main elements.
Data collection and management	Skills in designing and conducting surveys, focus groups, and interviews, as well as managing databases. Also, proficiency in statistical methods and software (like SPSS, R, or Excel) for analysing quantitative data.
Analytical and Critical Thinking	Ability to analyse data and interpret results to make informed decisions and to assess the quality of evidence and make judgments about the effectiveness of programs.
Problem-Solving Skills	Capability to identify challenges in instruments implementation and suggest feasible solutions and adaptations.

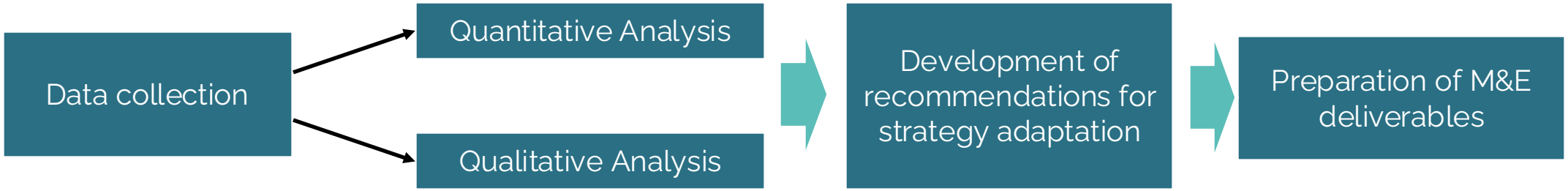
Which are more commonly used M&E tools?

When establishing an M&E framework, it is crucial to utilize effective and user-friendly tools that facilitate a streamlined monitoring and evaluation process. These tools also enable the identification of potential risks of failure, opportunities for improvement and adaptation, as well as valuable lessons for future interventions. Section 6.2 provides a more detailed explanation of these tools.



Which are the processes to conduct M&E?

M&E is expected to deliver certain deliverables that are key for strategy management, decision-making and strategy adaptation. Their elaboration needs to be planned and organised based on the compilation and analysis of certain information where different line ministries and other public sector institutions are involved. Intra-institutional and interinstitutional coordination is crucial in all the stages specified below.



6.2 M&E tools and steps to build a M&E framework: Tools structure & examples

A variety of M&E tools can be utilised to construct a **systematic and practical framework for analysing the performance and impact of a strategy.**

This section introduces **four tools** that could be **used sequentially:** an **intervention logic, a logic framework, an M&E plan, and an M&E reporting template**. Each of these M&E tool contains distinct elements that complement each other.

M&E tools are invaluable for policy practitioners as they facilitate the development of various types of **reports necessary for planning, decision-making, and adaptation.**

Tool 1: The intervention logic for M&E

The **goal-oriented intervention logic** (introduced in Chapter 3 and also mentioned in Chapter 5) in addition offers a **comprehensive structure to monitor and evaluate step-by-step if policy instruments** are contributing (or contributed) to the specific and general objectives of economic diversification.

The structure of the goal-oriented intervention logic (by levels) allows to relate it to a M&E terminology.

- **Level 1. National Goals** allow to establish the **final impact** that the intervention is pursuing (e.g. promote decarbonisation)
- **Level 2. General objective** allow to establish the **intermediate impact** that the intervention is pursuing (e.g. promote green economic diversification)
- **Level 2. Specific objectives** allow to establish the **outcomes** that the intervention is pursuing (e.g. increase regional value addition/sophistication in low-carbon value chains)
- **Level 3. Policy instruments** allow to measure **outputs** that the intervention is pursuing (e.g. green loan to support the development of a new product)

For a graphic representation, see next slide.

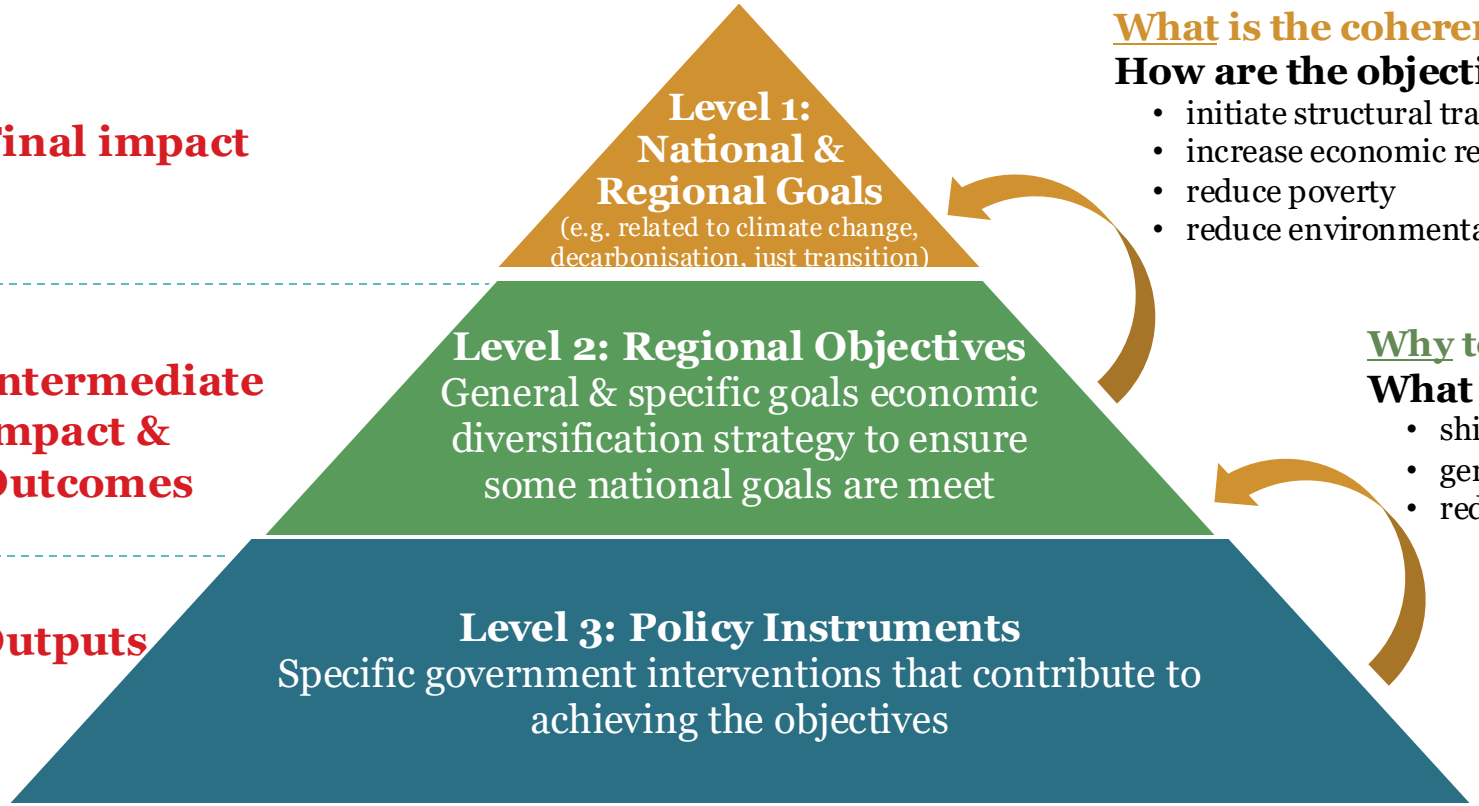
Tool 1: The intervention logic with M&E terminology

Sequential process that allows to monitor the intervention and evaluate the impact

Final impact

Intermediate impact & Outcomes

Outputs



What is the coherence of the Economic Diversification Strategy?

How are the objectives aligned to national and regional goals?

- initiate structural transformation process
- increase economic resilience
- reduce poverty
- reduce environmental damage (e.g. decarbonisation)

Why to pursue an Economic Diversification Strategy?

What are the key objectives a region wants to achieve?

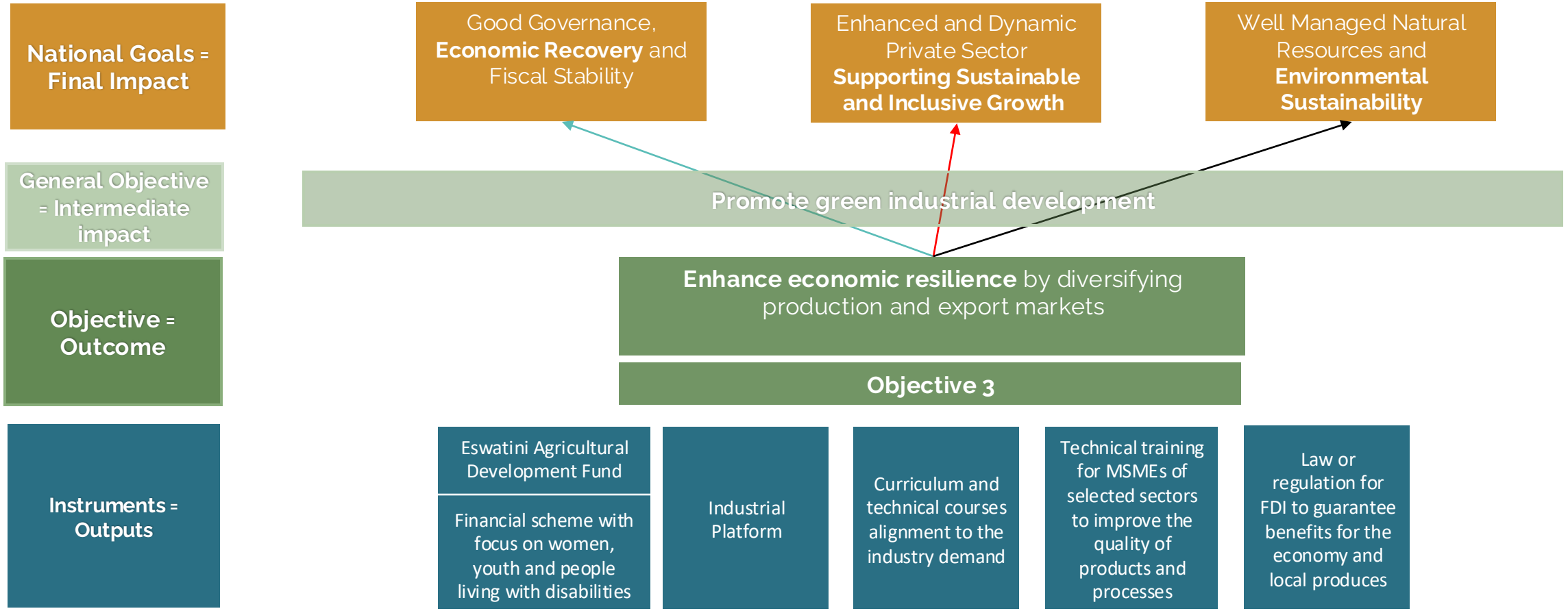
- shift to more sophisticated sectors and value-added products
- generate quality employment
- reduce emissions

How will the local government intervene to support the achievement of regional objectives?

- Establish different types of instruments (e.g. regulations; incentives; information; public ownership)

Case study: goal-oriented intervention logic for economic diversification of Antofagasta

This is an example of a simplified version of a goal-oriented intervention logic presented in Chapter 3 that only considers one objective that deals with economic diversification.



Tool 2: A logic framework for economic diversification

A **logical framework** is a tool to **systematically describe, monitor and evaluate how policy instruments (outputs)** lead to a concrete **outcomes and impact. <u>It serves to operationalize the intervention logic.</u>**

The structure of the logic framework is a table that lists the following elements (next slide explain them more in detail):

Vertically

- *inputs = activities*,
- *outputs = instruments*,
- *outcomes = specific objectives*, and
- Intermediate impact = general objective
- long-term *impact = national goals*

Horizontally

- Description of the input, output, outcome and impact
- Indicators (KPIs)
- Base lines value
- Target value
- Means of verification
- Assumptions

Something to emphasise is that when conducting the evaluation of a concrete policy instrument is important to have in mind that the final and intermediate impact could also be influenced by other factors (e.g. other policy instruments, international policies). Therefore, is difficult to attribute a successful impact to only one type of intervention.

Structure of a logic framework

The structure is *linear*, which means that all activities lead to outputs which lead to outcomes and the impact. Section 6.3 will develop in detail how to choose indicators and set targets.

Levels	DESCRIPTION	INDICATORS (how to measure policy implementation at the different levels)	BASE LINE value & year (status quo at the beginning of implementation	TARGET value & year (future scenario during / after policy implementation)	MEANS OF VERIFICATION (Where you can find the information)	ASSUMPTIONS (An statement that is accepted as true or as certain to happen without proof)
Final Impact= National Goal						
Intermediate Impact= General Objective						
Outcome = Specific Objectives						
Output = Instrument						
Input = Activities						

Example of a logic framework

	DESCRIPTION	INDICATORS	BASE LINE	TARGET	MEANS OF VERIFICATION	ASSUMPTIONS
Impact= National Goal	Well Managed Natural Resources and Environmental Sustainability	• CO_2 emissions generated (tonnes)	• X	• X	International Energy Agency database International Energy Agency database	One of the country's priorities is to pursue environmental sustainability in the long run and has the support of all required stakeholders
Intermediate Impact= General Objective	Promote green industrial development	• Share of Manufacturing Value Added in total GDP (%) • Manufacturing Value Added emissions intensity (kg/USD)	• X	• X	National Accounts International Energy Agency database	Industrial producers improve their production practices by shifting to more renewable energy
Outcome = Objective	Promote green industrialisation by supporting renewable energy	• Share of renewable energy over total final energy supply (%) • Share of renewable energy over total final energy consumption (%)	• X • X	• X • X	Environmental survey or database in the country	Local producers have the incentive to produce RE
Output = Instrument	Green loan to buy machinery/technology for renewable energy	• Amount of resources allocated (UDS) • Number of beneficiaries (#)	• X	• X	National banking system annual reports	Local producers present a feasible project to produce RE involving new technology
Input = Activities						

Example of a logic framework

Thanks to its linear structure, the logic framework allows to do a verification of the expected change. See below a quick example: IF the instrument is established and the assumption is true, then the outcome is achieved. Spelling out the causal chain should be done for each step in the intervention logic.

	DESCRIPTION	INDICATORS	BASE LINE	TARGET	MEANS OF VERIFICATION	ASSUMPTIONS
Impact= National Goal	Well Managed Natural Resources and Environmental Sustainability	• CO_2 emissions generated (tonnes)	• X	• X	International Energy Agency database International Energy Agency database	One of the country's priorities is to pursue environmental sustainability in the long run and has the support of all required stakeholders
Intermediate Impact= General Objective	Promote green industrial development	• Share of MVA in total GDP (%) • MVA emissions intensity (kg/USD)	• X	• X	National Accounts International Energy Agency database	Industrial producers improve their production practices by shifting to more renewable energy
Outcome = Objective	Promote green industrialisation by supporting renewable energy	• Share of renewable energy over total final energy supply (%) • Share of renewable energy over total final energy consumption (%)	• X • X	• X • X	Environmental survey or database in the country	Local producers have the incentive to produce RE
Output = Instrument	Green loan to buy machinery/technology for renewable energy	• Amount of resources allocated (USD) • Number of beneficiaries (#)	• X	• X	National banking system annual reports	Local producers present a feasible project to produce RE involving new technology
Input = Activities						

THEN

IF

AND

Tool 3: An M&E plan for economic diversification

An M&E plan is a tool to **plan and practically organise the development** of M&E deliverables (e.g. annual monitoring reports, mid-term review report, final evaluation).

The main purposes:

- Define **concrete tasks and steps** towards the production of M&E deliverables
- Establish clear **timelines** and the **status of each task**
- Identify **responsibilities** (e.g. through task teams)
- Allow to **monitor progress in the production of M&E deliverables**
- Can be **developed for different M&E** deliverables

The structure is a simple table organised according to the tasks that need to be conducted to elaborate and M&E deliverable. See next slide

Structure of a M&E Plan

Color-coded status report for easy monitoring

Formation of task teams/groups
Definition of responsibilities

M&E Plan for Mid-Term Review (MTR) of Rwanda's Industrial Policy 2025-2035

Status
Completed
In progress
Delayed
Not started

Group for some specific tasks	Task team members
Group A: responsible for chapter 3 - **Review of implementation progress** of IP (policy measures)	*tbd*
Group B: responsible for Chapter 4 - **Review of immediate outcomes** of IP in the key IAs	*tbd*
Group C: responsible for Chapter 5 - **Review of impact** of IP on IP objectives, vision & NDGs	*tbd*

	Tasks	Status	Time			Human resources				Notes/ Requirements
			Start date	Deadline	Frequency	Responsible Group	Responsible person	Task Team members	Support by external partners (TBI, AfDB, WB, UNIDO, etc.)	
A	**Data collection**					**Overall lead (*put name of person in charge*)**				
A.1	**Collect data with Reporting Form (RF)**	In progress								
A.1.1	Finalize the RF by completing info on all Policy Measures (Milestones, Additional Progress Indicators, Challenges and Solutions)	Not started								
A.1.2	Provision of Information to Line Ministries on the M&E System and RF	Not started								
A.1.3	Collect data with RF from line ministries, implementing agencies, etc.	Not started								Can be started once tasks A.1.2 is finalized
A.2	**Collect data from NISR (and possibly RRA)**	Not started								
A.2.1	Clarify expected progress of industrial survey with NISR	Not started								
A.2.2	Ensure consideration of additional data requirements in new industrial survey	Not started								
A.2.3	Retrieve full dataset from NISR survey (and from RRA)	Not started								
A.3	**Collect data from international databases**	In progress								
A.3.1	Download all data from WDI, INDSTAT, WITS, ILOSTAT etc.	Not started								
A.3.2	Review and process all data from WDI, INDSTAT, WITS, ILOSTAT etc.	Not started								
A.3.3	Calculate all indicators with data from WDI, INDSTAT, WITS, ILOSTAT etc.	Not started								
A.4	**Collect additional data from other sources** (incl. questionnaires, interviews, etc.)	Not started								
A.4.1	Collect all data from key national data sources according to the log-frame	Not started								
A.4.2	Collect data/information on qualitative case studies (e.g. key concrete measures) (*if necessary*)	Not started								
A.4.3	Plan and execute an additional survey (*if necessary*)	Not started								
A.5	**Check if collected data is complete**	Not started							*e.g. joint review*	Can be completed after A.1-A.4 is completed
A.6	**Integrate data for all indicators into IP log-frame**	Not started							*e.g. final quality control*	Can be completed after A.5 is completed
B	**Quantitative analysis**					**Overall lead (*put name of person in charge*)**				
B.1	**Define scope and depth of quantitative analysis (which indicators, time series, etc.)**	Not started					*Overall lead*			
B.2	**Analyse data on implementation progress from RF data on milestones and delays (Chapter 3.1)**	Not started				Group A		Task team members of Group A		Can be conducted once the data collection with RF has been completed
B.2.1	Preliminary analysis of data on measures where MINICOM is in charge	Not started								
B.2.2	Produce graphs with data for all measures from all line ministries/agencies	Not started								
B.2.3	Interpret graphs with data for all measures from all line ministries/agencies	Not started							*e.g. review results*	Can be started after task A.1 is completed

Define process/ steps and concrete tasks + timelines

Example of a M&E Plan from country X: Time-Plan for a specific task (data collection)

	Tasks	Status		Time		
				Start date	Deadline	Frequency
A	Data collection					
A.1	Collect data with RTF from Line Ministries		Not started	15.05.20	30.10.20	ongoing
A.2	Collect data from NIS		Not started	15.05.20	30.11.20	check monthly
A.3	Collect data from international databases		Not started	15.05.20	15.09.20	once
A.4	Collect additional data from other sources (incl. national sources, questionnaires, interviews, etc.)		Not started	15.05.20	15.09.20	ongoing
A.5	Check if collected data is complete		Not started	01.08.20	31.12.20	monthly
A.6	Integrate data for all indicators into IDP log-frame		Not started	01.08.20	31.12.20	monthly

Tool 4: An M&E reporting template for green economic diversification

A reporting template is:

- a **harmonised structure for decentralised stock-taking** on strategy activities and advances by the different stakeholders involved in implementation (→ **focus on instruments = outputs**)
- an **Excel-based form for the systematic collection of data** and information on individual policy measures
- a **tool for progress reporting** from relevant line ministries and agencies

The main purposes are to:

- **provide an overview of the state of implementation** of the strategy
- **collect information from line ministries and other government institutions and reduce the workload of all parties involved** (i.e. both for those reporting and for those having to analyse the reported data) by clearly defining what type of information needs to be collected and by establishing a harmonised structure (in the form of "milestones")
- **compile information on achievements but also challenges** and potential solutions.

Structure of a M&E reporting template

The reporting template is based on the objectives and policy instruments identified as part of the intervention logic (Level2 and Level 3). It classifies the information according to a user perspective (the person that reports the information) or a recipient perspective (the person doing the analytical and M&E work) and specifies:

User perspective

- Description of the instrument
- Milestones and progress indicators
- Planned timeline for the achievement of the milestone
- If the milestone has been achieved
- Why the milestone has not been achieved
- What could be done to overcome the challenge

Recipient perspective

- Completion of the milestone
- Achievement of the milestone
- Overall achievement of the instrument

Example of a M&E reporting template

Objective	Intervention area	Policy Instrument	Policy Measures/Action Plans	Milestones & progress indicators	Planned timeline for achievement of milestone (Day/Month/Year)	Has the milestone been achieved? (Achievement/Progress)	Why has the milestone not yet been achieved? Please list the main challenges?	What could be done to support/ overcome these challenges?	Completion of Milestone	Achieve-ment of Milestone (Time)	Overall achievement of the IP instrument (Cluster A)
2	2.1	2.1.1 & 2.1.3	Review and amend the Law on Investment and other relevant regulations to respond to the concrete needs + Further strengthen favorable environment for investment and doing business by improving the regulatory framework, rationalizing the provision of incentives for investment projects, strengthening the good governance and the effectiveness of relevant public institutions, especially the One-Window Service mechanism at the Council for Development of Country X (CDC) to become an effective and practical mechanism	Milestone 1: Has the drafting and consultation process of Law on Investment started?	31.12.2016	Yes	*NO*	*NO*	Completed	Completed	Delayed
				Milestone 2: Has the drafted Law on Investment been submitted to the cabinet plenary meeting?	31.12.2020	No	*The draft Law on Investment is still under final review by CDC management*	*CDC can speed up the reviewing process.*	Not completed	Delayed	
				Milestone 3: Is the Law on Investment in force?	31.12.2020	No	*NO*	*NO*	Not completed	Delayed	
				Additional progress indicator 1: Has the private sector been involved in the process?	Yes, it has (meeting with CCC, law firms, and inter ministries)						
				Additional progress indicator 2: What is the concrete result/outcome you expect to achieve when this new law is in place?	Increase country competitiveness; increase productivity and modernize local industries; reinforce integration into regional and global value chain; create transparent, predictable, non-discriminative, competitive investment regime						
2	2.1	2.1.2	Review and revise criteria of selecting "potential and quality investment projects" that generate value addition and positive externality for the development and attraction of new industries into Country X	Milestone1: Have the current list of investment activities (negative list) and their criteria been started reviewing?	31.12.2016	Yes	NO	NO	Completed	Completed	Delayed
				Milestone2: Have the new list of investment activities and criteria of selecting those potential and quality investment activities/projects been drafted and internally discussed?	31.12.2019	Yes	NO	NO	Completed	Completed	
				Milestone3: Have the new list of investment activities and criteria of selecting those potential and quality investment activities/projects been validated, accepted and utilised attract new investments and industries into Country X?	31.12.2020	No	There are still important discussion and consultation with relevant ministries.	CDC can provide facilitation in order to speed up the process of discussiona and consultation with relevant ministries.	Not completed	Delayed	
				Additional progress indicator 1: Is there a task force to review and revise criteria of potential and quality investment projects?	Yes, there is (CDC LOI team)						
				Additional progress indicator 2: What is the result CDC expects to achieve?	Able to to use criteria of selecting potential and quality investment projects to generate value addition and positive externality for the development and attraction of new industries into Country X						

User's side:
template for reporting

Recipient's side:
analytical tool

Sequential steps to elaborate an M&E framework

The M&E framework allows to define what, how, who and when will be monitored and evaluated

Elaborate an intervention logic

- Define outputs, outcomes and expected results of interventions

Develop a logical framework

- Define indicators to measure all levels of the Intervention Logic
- Calculate baseline values
- Set target values
- Identify means of verification
- Establish assumptions

Establish a M&E Plan

- Define tasks & steps to produce M&E deliverables
- Identify timelines
- Establish responsibilities

Create a reporting template

- Define a harmonised form for systematic compilation of information and decentralised data collection

Impact evaluation as one of the main purposes of applying an M&E framework

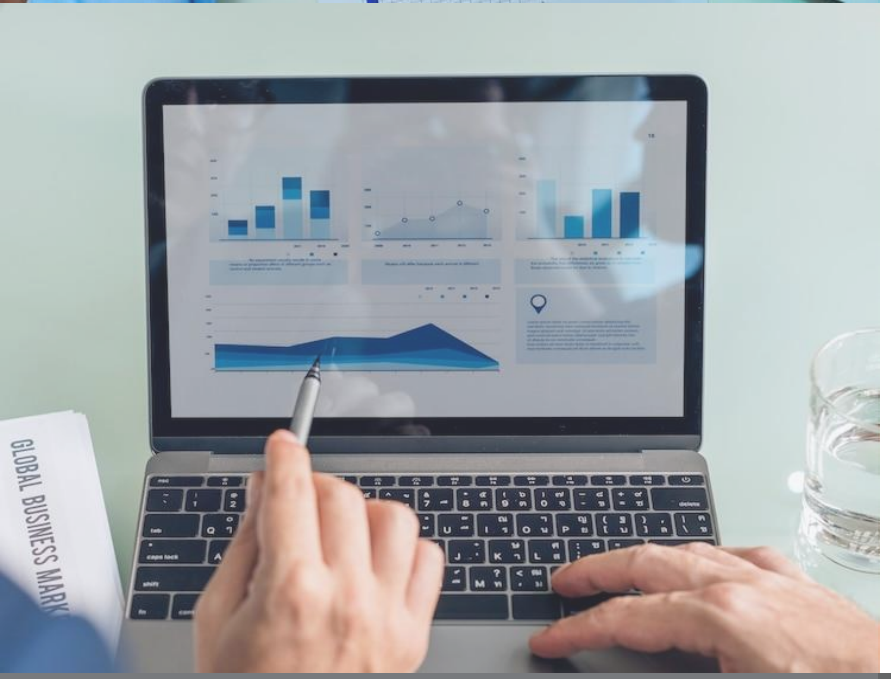
Impact evaluation is an essential resource for policy practitioners, providing evidence-based insights that support effective decision-making. While its benefits are widely recognised, it is important to understand the various methods available for conducting evaluations and how to implement them effectively.

The second edition of the World Bank's handbook titled "Impact Evaluation in Practice" serves as a comprehensive guide for policymakers, practitioners, and researchers engaged in the field of impact evaluation. Key features of the handbook include:

Practical Guidance	Diverse Methods	Real-World Examples	Data Use and Management	Designing Evaluations for Learning	Policy Implications
•Provides actionable steps for designing, conducting, and analysing impact evaluations, emphasising the importance of rigorous methodologies.	•Discusses a range of evaluation methods, including randomised controlled trials (RCTs), quasi-experimental designs, and mixed-method approaches, highlighting their appropriate applications.	•Presents case studies from various sectors that are included to illustrate how impact evaluation can be implemented effectively in different contexts and to demonstrate the practical implications of evaluation findings.	•Emphasizes the importance of data collection, management, and analysis, providing tools and tips for working with data throughout the evaluation process.	•Encourages a culture of learning by showing how to incorporate feedback mechanisms into programs based on evaluation results.	•Underscores how impact evaluations can inform policy decisions, improve program design, and contribute to accountability by demonstrating the effectiveness of interventions.

The evaluation methods and processes of handbook could be applied for impact assessment of economic diversification strategies at a regional level.

To access the full content of the Handbook go to: Impact Evaluation in Practice



6.3 Choosing indicators and target-setting for M&E: What is an indicator and alternative scenarios development for target-setting

Indicators play a **significant role** in an **M&E framework**, as they provide an **objective means of measuring the performance** of the strategy and **assessing** whether it is on the **right track** to achieve its objectives and generate the desired impact.

For policy practitioners, **selecting the appropriate indicators** is essential to **ensure that the M&E process yields accurate results** that are valuable for decision-making.

In addition to selecting indicators, **establishing targets** is also necessary for **effective M&E**. Targets **provide concrete expectations** regarding what the **strategy should accomplish** through the implementation of policy instruments.

What is an indicator for M&E?

An indicator is a measurement that reflects the condition or level of a specific aspect of a project or intervention. From an M&E perspective, indicators are vital because they translate the intervention logic into a framework that makes both implementation and results measurable, assessable, and ultimately visible.

The primary principle of an indicator is that it must align with the intervention logic and measure the desired output, outcome, or impact. Selecting the appropriate indicator can significantly influence the perception of the strategy's implementation, determining whether it is assessed as a success or a failure.

The role of targets for M&E

Targets define "***where we want to go and how fast***"

They allow us to **track progress**

Monitoring targets continuously over time provides an "**early warning system**"

This allows the **dynamic adaptation** of policy planning and implementation

- E.g.: "We are not on track to achieve result X in 5 years"→ "We need to re-configure our policy measures"

Key principles for target-setting

There is not *one* correct way to set targets

- Do not follow suggestions blindly!
- The target setting process needs to be fully understood!

The definition of targets is highly context specific

- Which results are citizens/ private sector expecting?
- How ambitious is your policy instrument?
- What is the relevant timeline?

Use alternative scenarios to set targets

- Don't just project one future value
- Consider uncertainty!
- Target-setting always involves an element of judgement

Setting targets with EQuIP

- **Baselines** are the starting point for target-setting that relies on a simple projection / estimation of future performance
- The **status quo or recent performance trends** can serve as baseline
- Simple projections into the future can generally be done for all indicators on all levels of analysis
- EQuIP suggests to draw on the following **inputs**:
  - The **region's prior (growth) performance** for the indicator
  - The (**growth) performance of a benchmark country / region/ role model**

Scenario analysis for target-setting

Once baselines have been established, it is essential to conduct a scenario analysis.

What is scenario analysis?

- A process of analysing possible future events by considering alternative possible outcomes

What does scenario analysis give you?

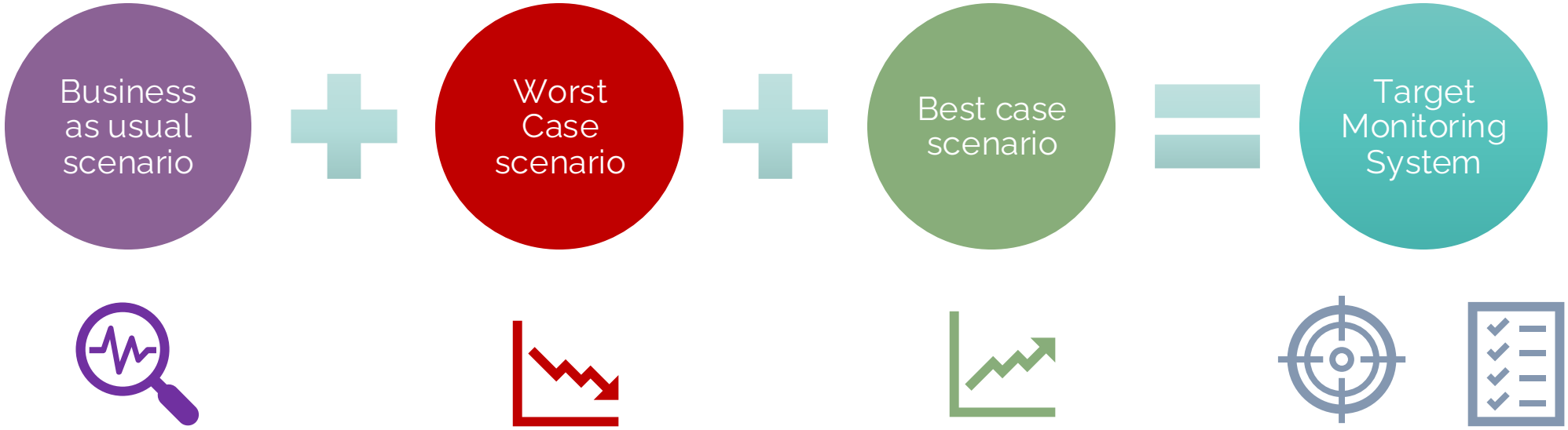
- Projections of several alternative future development paths

What are the benefits of scenario analysis?

- It challenges you to think more creatively
- It questions assumptions about the future
- It allows you to consider uncertainty
- It fosters communication and planning
- It enhances credibility

Types of scenarios for target-setting

Establishing different types of scenarios enables the consideration of a range of potential outcomes for the intervention. This approach is especially important, as the outcomes and impacts on specific variables may also depend on external factors.



Scenarios for target-setting

1. **Establish own performance trends** to understand recent/current pathway:
   - Allows to establish **"business as usual" scenario**

2. **Identify benchmarking (role model)** to assess feasibility of ambition:
   - Allows to establish **"best case" scenario**

3. **Identify past crisis** for risk management:
   - Allows to establish **"worst case" scenario**