



# Training Packages on Policies of SCP and Circular Economy Policy Reinforcement for Environmentally Sound and Socially Responsible Economic Development in China (PRODEV)

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# Policy Reinforcement for Resource Efficiency

## Instruments and Approaches to Sustainable Consumption and Production

# Introduction and outline of the training workshop

## Policy Reinforcement for Resource Efficiency

### Instruments and Approaches to Sustainable Consumption and Production

Prepared by the UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP) in collaboration with the United Nations Environment Programme (UNEP), the Chinese State Environmental Protection Administration (SEPA) and the Municipality of Guiyang, China.



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## Introducing the CE Training Package

### Background and Objectives of the Training Program

The project Policy Reinforcement for Environmentally Sound and Socially Responsible Economic Development in China (PRODEV) aims to improve the policy framework and promote a more integrated decision-making process in local government to foster environmentally sound and socially responsible economic development in China, referred to as the Circular Economy.

A policy framework study was undertaken during March and April 2006 in Guiyang, an industrial city in south-western China, that has been designated by national level authorities in China as a pilot city to develop and implement a Circular Economy. The knowledge and experience gained from the study formed a basis for developing the content of the training package such that key needs and opportunities within the Chinese Circular Economy context are addressed.

This document is intended to provide training specialists with an outline of the resource efficiency training package and key points and objectives of the presentations and exercises. The focus of the training package is to build institutional and technical capacities among policy makers to integrate sustainable development principles into the policy system, and where necessary, to develop policy interventions to forge a path to alternative urban development. Key messages that workshop participants should gain from the training are to provide an understanding of Sustainable Consumption and Production/Circular Economy concepts and principles, leading strategies, measures and instruments and methods and action steps to implement those measures. There should be a well balanced mix of approaches including 'top down' measures such as regulatory instruments and bottom up approaches such as information and other supportive instruments.

The UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP) developed the training package in partnership with the United Nations Environment Programme (UNEP), the Chinese State Environmental Protection Administration (SEPA) and the Guiyang Municipal Government. The European Commission provided financial support to the project.

### The Chinese Circular Economy Initiative

As an emerging and rapidly developing country China is increasing demand for a wide range of natural resources on world markets. In the past 20 years, China's consumption of oil has risen by 100%, natural gas by 92%, steel by 143%, copper by 189%, aluminium by 380%. During the last 12 years China has attained on average a 10 per cent economic growth rate per annum. China accounted for nearly 30 per cent of the world's GDP growth since 1992. The Chinese government has established a development target of quadrupling GDP by 2020 while at the same time improving environmental quality, protecting natural resources and maintaining social progress. It is widely ac-

cepted that employing alternative economic development pathways rather than the conventional industrialisation models adopted by most developed countries is the only way to achieve these ambitions.


China is now at the experimental stage of development of the Circular Economy and many barriers remain including awareness, theory, technology, legislation and policy. Following the recognition at the highest political levels to promote the establishment of a Circular Economy, the leadership role for development of the Circular Economy concept has been transferred to the National Development and Reform Commission (NDRC). Central and local governments have been asked to adopt the principles of a Circular Economy as guidance for making their development plans for the upcoming 11th Five-Year Plan (2006-2010).

At present, legislative work for the “Law on Circular Economy” has been launched by the State. The Environmental Protection and Resources Conservation Committee of the National Peoples Congress (NPC) have established a Leading Group for drafting the “Law on Circular Economy”. Some key elements of the upcoming Circular Economy law include Extended Producer Responsibility requirements, financial supports from government, a strengthening of research and development activities, performance evaluation, information disclosure and public participation.

The Chinese State Environmental Protection Administration (SEPA) has played a pioneering role in the development and promotion of the Circular Economy approach. Pilot work on Circular Economy and ecologically adapted industry has been conducted by SEPA since 1999. The Circular Economy concept focuses on three levels:

- At the **level of enterprises**, the concept of the Circular Economy is being promoted through cleaner production methods within firms and industrial parks. In 2003 a “Law on Promotion of Cleaner Production” was issued in China. Currently there are over 5000 enterprises comprising 20 industries in 20 provinces that conduct cleaner production activities
- At the **regional level**, SEPA began to promote and support the construction of the ecological industrial park Guiyang, Guangxi Province, in 1999. In 2003, on the basis of summarizing experience and improved theories, SEPA further introduced the concept of the Circular Economy and ecologically adapted industry into further economic development and high-tech zones by targeting high energy consuming and heavy polluting industries in particular.
- At the **municipal and provincial level**, SEPA has named official pilot regions for Circular Economy implementation, including Guiyang Municipality, Liaoning Province and Jiangsu Province, Rizhao Municipality among others. Many more municipalities, provinces and industrial development zones have engaged themselves in this piloting effort. Within these pilot cities China has witnessed the Circular Economy develop from theory into practice. The pilot provinces and cities play a major demonstration role in the promoting the uptake of Circular Economy activities in other regions and enterprises.

The National Development and Reform Committee, SEPA and other relevant ministries have identified a group of pilot industries and areas (units) for Circular Economy implementation. This includes



the steel and iron, metallurgical, chemical and recycled resources industries in 13 industrial parks and development zones at the state and provincial level. Other units for Circular Economy implementation include centralized zones for heavy chemical industries and agricultural demonstration zones in 10 provinces and cities with an identified lack of resources or are burdened with a high density of industrial development. The focus on pilot scale implementation of the Circular Economy is intended to contribute to social, economic and environmental development, but has also to provide invaluable knowledge and experience for further implementation of the Circular Economy concept China.

## Training Workshop Content

The training package consists of three training modules. It aims to provide both the broad picture related to resource efficiency, provide knowledge on concrete tools and build capacity in local policy makers to implement these implements on the ground. The different training parts and their specific objectives are:

- **‘Thinking Circular Economy – Concepts & Principles’**  
The first training day introduces the participants to key principles behind the Circular Economy (CE) concept and Sustainable Consumption and Production (SCP) aiming to create awareness and understanding for CE and SCP issues and the “CE/ SCP way of thinking”.
- **‘Promoting Circular Economy – Measures & Instruments’**  
The second training day provides an overview over key measures, instruments and strategies that policy makers can apply to build the framework and foster Circular Economy and sustainable consumption and production patterns.
- **‘Implementing Circular Economy – Methods & Action Steps’**  
The third training day provides key methods and guiding action steps for policy makers to get CE and SCP going by applying principles and existing measures and instruments in a coherent and sound way.

	Day 1	Day 2	Day 3	
Welcome and Introduction	<b>Thinking Circular Economy</b>	<b>Promoting Circular Economy</b>	<b>Implementing Circular Economy</b>	Summary and Outlook
	Concepts & Principles	Measures & Instruments	Methods and Action Steps	
	<b>Think 1 – 5</b>	<b>Promote 1 – 8</b>	<b>Implement 1 – 6</b>	

The content of the different training parts is organised in different modules. Each module has a **Presentation** focusing on introducing the issues at hand, and an **Exercise** oriented on allowing the participants to discuss presented options and solution-oriented case studies, and to gain direct experience with the content introduced. Through out three days, the training programme strongly builds on the presentation of concrete case studies from Europe, China and other places.

## Suggested Schedule

The training is designed for a full three day workshop. A suggested schedule might look as follows:

<b>Day 1: Thinking CE - Concepts and Principles'</b>		
09:00 – 09:30	Welcoming the participants	<b>Welcome</b>
09:30 – 10:00	Introduction to Training	<b>Introduction</b>
10:00 – 10:30	Setting the stage: 'Thinking CE - Concepts and Principles'	<b>Think1</b>
10:30 – 12:00	World-wide trends and European/Chinese success stories on CE and SCP	<b>Think2</b>
	Lunch	
13:30 – 16:00	Circular Economy and SCP in China & Key results from the Guiyang policy framework study	<b>Think3</b>
	Coffee	
16:15 – 17:15	Opportunities: Opportunities for advancing sustainable consumption and production in China	<b>Think4</b>
16:15 – 17:15	The SCP policy toolbox: Supporting government to address the opportunities ahead	<b>Think5</b>
17:15 – 17:30	Summary of 'Thinking CE – Concepts and principles'	<b>Think6</b>
<b>Day 2: Promoting CE – Measures &amp; Instruments</b>		
09:00 – 09:15	Overview on 'Promoting CE – Measures & Instruments'	<b>Promote1</b>
09:15 – 10:15	Regulatory Instruments: Setting the rules	<b>Promote2</b>
10:15 – 11:15	Economic Instruments: Getting the prices right	<b>Promote3</b>
11:15 – 12:15	Cooperation Instruments: Initiating cooperation initiatives	<b>Promote4</b>
	Lunch	
13:30 – 14:30	Educational and Research Instruments: Educating and creating awareness	<b>Promote5</b>
14:30 – 15:30	Informational Instruments: Providing targeted information	<b>Promote6</b>
	Coffee	
16:00 – 17:15	Bringing the pieces together: Designing a sound policy mix	<b>Promote8</b>
17:15 – 17:30	Summary of 'Promoting Circular Economy – Measures & Instruments'	<b>Promote9</b>
<b>Day 3: Implementing CE - Steps for taking successful action</b>		
09:00 – 09:15	Overview on 'Implementing CE - Steps for taking successful action'	<b>Implement1</b>
09:15 – 10:45	Setting Priorities: Analysis of current production and consumption patterns	<b>Implement2</b>
10:45 – 12:15	Assessing the Policy Opportunities: Drafting and Analysing Policy Options	<b>Implement3</b>
	Lunch	
13:30 – 14:45	Implementing the policies: Policy coordination through networks and partnerships	<b>Implement4</b>
14:45 – 15:30	Following up policy implementation: Indicators, evaluation and corrective action	<b>Implement5</b>
	Coffee	
16:00 – 16:30	Summary of 'Implementing CE - Steps for taking successful action'	<b>Implement6</b>
	Break	
16:30 – 17:30	Closing Session, Feedback and Provision of Certificates	<b>Closing</b>



## The Training Workshop in Detail

### Day 1: 'Thinking Circular Economy – Concepts & Principles'

#### Key Objectives for Day 1:

- Workshop participants will have good knowledge of the latest state-of-the-art on Circular Economy and Sustainable Consumption and Production (SCP) in China, Europe and other leading regions.
- Workshop participants will have considered and identified major CE and SCP opportunities for their region and will have provided and discussed a number of options for implementation.
- Workshop participants will have a good understanding of the role and importance of governments as well as the necessity of good coordination among different departments and bureaus for setting a sound framework for CE and SCP.

#### Welcome and Introduction

<b>Welcome</b>	<b>Welcoming the participants</b>
<b>Presentation</b> 30 min	<ul style="list-style-type: none"> <li>• <b>The organisations behind:</b> Introducing SEPA, UNEP and CSCP</li> <li>• <b>The guests:</b> Participants background and expectations</li> </ul>
<b>Introduction</b>	<b>Welcoming the participants</b>
<b>Presentation</b> 30 min	<ul style="list-style-type: none"> <li>• <b>What is Prodev?</b> A short overview on the Prodev project</li> <li>• <b>What is the training about?</b> Introducing the three parts</li> <li>• <b>What will happen?</b> Introducing modules, presentations and exercises</li> </ul>
<b>Think1</b>	<b>Setting the stage: 'Thinking CE – Concepts and Principles'</b>
<b>Presenta- tion</b> 30 min	<ul style="list-style-type: none"> <li>• <b>What it is all about:</b> Presenting the objectives of Day 1</li> <li>• <b>What will come:</b> Introducing the modules in Part 1</li> </ul>
<b>Think2</b> 1:30 hr	<b>World-wide trends and European/Chinese success stories on CE and SCP</b>
<b>Presenta- tion</b> 45 min	<ul style="list-style-type: none"> <li>• <b>Structural Change: The case of Germany:</b> This section demonstrates how structural change affect the region of North-Rhine Westphalia in the last decades and reduced resource consumption, environmental impacts and increased quality of life.</li> <li>• <b>The case of China: Recent trends and why resource consumption matters:</b> Provides information on the Chinese situation, showing the increasingly high resource use and consequential scarcity arising and the environmental impacts related to this especially in urban areas. Last, it briefly inquires into current growth in consumption levels and the emergence of the 'global consumer class' in emerging markets, and especially in China.</li> <li>• <b>The decoupling challenge: Opportunities through resource efficiency:</b> This section introduces the concept of resource efficiency and policy frameworks that have been taken up in Europe, Germany and China to implement the concept. It also compares resource efficiency to other environmental policy approaches and shows the potential that national programmes for raising resource efficiency might help, also for promoting small and medium sized enterprises.</li> </ul>
<b>Exercise</b> 45 min	<b>Group Brainstorming:</b> "What environmental, economic and social benefits do you expect from implementing Circular Economy in your region?"

**Think3**  
2:30 hr**Opportunities for China: The key results from the policy framework study****Presenta-  
tion**  
30 min

- **Current status of Circular Economy in China:** Provides an overview of the national CE framework in China and envisioned implementation mechanisms
- **Main results of a policy framework study:** Presents the main results of the Policy Framework Study undertaken in Guiyang as a pilot city. It includes the main barriers identified and the current state of instrument application and stakeholder involvement.

**Exercise**  
45 min

- **Individual brainstorming:** “Consider the main barriers identified in Policy Framework Study and write down possible solutions to overcome the barriers on cards”
- Identified solutions will be clustered on clip chart

**Think4**  
1:30 hr**Opportunities for advancing sustainable consumption and production in China****Presenta-  
tion**  
45 min

The presentation introduces opportunities in the areas of Finance, Partnerships, Technology and Capacity Building. For all areas, brief case studies from Europe and other regions are provided that illustrate the principles described.

- **Funding and financing:** Shows how a mix of public and private funding can be used to implement SCP policies. Examples for this include eco-taxes, international finance mechanisms like the Clean Development Mechanism, or initiatives by private financial institutions like the Equator Principles.
- **Technology transfer and development:** Shows some opportunities to overcome the lack of access to appropriate technologies and / or the lack of ability to develop these. Options presented here include technology transfer, the building up capacities for local technology development and assessment and institutions for promoting the spread and uptake of technology.
- **Engagement and partnership:** While single actors unable to move due to internal and external constraints, this can be overcome through partnerships and network building. This section describes how resources and capabilities of different partners can be pooled to make SCP projects happen; how knowledge and information for policy and project implementation can be created and exchanged; and how demands for SCP products and services can be joined to develop markets for SCP.
- **Awareness raising and capacity building:** Awareness and knowledge of SCP sometimes stand in the way of implementation efforts. Options to address this challenge include internal programmes to strengthen the capacity of government institutions, personnel and decision makers; external programmes that target businesses, consumers, organisations, etc. and general programmes to integrate SCP into education.

**Exercise**  
45 min

**Group exercise:** Look onto one of the presented opportunity fields respectively (partnerships, capacity building, finance, technology) and come up with suggestions for improving resource efficiency.

**Think5**  
1:00 hr

## The SCP policy toolbox: Supporting governments to address opportunities

**Presenta-  
tion**  
30 min

### The importance of governments:

- This module highlights the importance of policy makers in setting the right framework for CE and SCP so that existing opportunities can be successfully seized and implemented
- It introduces the participants to the “SCP Policy Toolbox”. The toolbox contains different policy measures and instruments that policy makers can apply to set a sound framework for CE and SCP
- It provides the changeover to the next day in which selected measures and instruments of the policy toolbox will be looked onto and discussed more in detail

### Presentation in brief:

- **How governments can steer societies towards SCP:** Shows how governments can promote SCP through frameworks and specific actions targeted at businesses and consumers
- **Cooperation needed for policy sound making:** Describes how the complexity of SCP implementation needs to the need for coordination between different government departments and between different levels of government (local, regional, national).
- **Opportunities for SCP along the policy cycle:** Implementing SCP policies requires looking at the whole policy cycle, with specific implications for agenda setting, policy formulation, policy implementation and policy evaluation.

### The SCP policy toolbox:

- Provides an overview of key policy instruments.
- Contains a quick overview on the instrument categories (Regulatory, Economic, Cooperation, Information, Education, Support) and provides an idea to the participants what they will get to know in detail the following day.
- Strategies to take for sanctioning or supporting enterprises:
  - **Reward / penalise:** Governments can provide incentives and sanctions towards SCP
  - **Support:** Governments can support societal actors to contribute to circular economy
- Factors that governments can address include...
  - **Hard issues:** The need for proper incentives and financing
  - **Soft issues:** The need to add societal pressures and reward good actions

**Exercise**  
30 min

### Group brainstorming:

- What could be done to enhance coordination and cooperation between different government departments?
- What is most effective and what is needed to help make the necessary changes?

**Think6**

## Summary of ‘Thinking Circular Economy – Concepts and principles’

**Presenta-  
tion**  
15 min

- **That was it:** Overview slide on all modules of Day 1
- **What will follow:** Issues from Day 1 that will be taken up in the following days and modules of the training

## Day 2 'Promoting Circular Economy – Measures & Instruments'

Objectives for day 2:

- Workshop participants are provided a good overview and in-depth knowledge on a wide variety of policy instruments to support policy-makers in setting up a sound framework for implementing CE and SCP.
- Workshop participants are provided an overview of the latest state-of-the-art on policy making best practices and experiences in the field of CE and SCP.
- Workshop participants become aware of the benefits of designing sound and integrated policy mixes that support CE and SCP.

The presentation of the modules are structured as follows:

- **Introducing the instrument category:** Provides a definition and objectives for the instrument category, shows their strength and weaknesses and the success factors.
- **The instrument category in focus:** Describes different instrument in the instrument categories and provides best-case examples for applying the instruments.

**Promote1**  
15 min

### Overview on 'Promoting Circular Economy – Measures & Instruments'

**Presentation**  
15 min

- **What has been:** Summarising Day 1
- **What it is all about:** Presenting the objectives of Day 2
- **What will come:** Introducing the modules of Day 2 and their basic content
- **Opening the toolbox of policy instruments:** Provision of overview of the instruments of the toolbox that will be introduced during Day 2
  - Regulatory instruments: Setting the rules
  - Economic instruments: Getting the prices right
  - Cooperation instruments: Initiating co-operation initiatives
  - Educational instruments: Educating and creating awareness
  - Informational instruments: Providing targeted information

**Promote2**  
1:00 hr

### Regulatory Instruments: Setting the rules

**Presentation**  
25 min

- **Introducing regulatory instruments:** Defines regulatory instruments as laws and any rules with a legally binding nature, set and enforced by public authorities. While they have a high certainty in achieving objectives, enforcement can be difficult and costly. Important success factors include policy coherence and legal authority and efficacy.
- **Regulatory instruments in focus:** This section focuses on norms and standards and liability laws. Both are defined and illustrated with case studies, e.g. the Japanese Top Runner Programme and the EU Environmental Liability Directive

**Exercise**  
35 min

#### Group discussion:

- Which of the regulatory instruments discussed in the presentation would be most effective in China/your region?
- At which phase of the product life-cycle will the instruments be most effective? Why?
- Which organisation can be most effective in taking the lead?

**Promote3**  
1:00 hr

**Economic Instruments: Getting the prices right**

**Presentation**  
25 min

- **Introducing economic instruments:** Economic instruments cover a range of taxation and pricing instruments that can raise revenue while simultaneously furthering environmental goals. While they reduce the costs of achieving environmental goals and contribute to fiscal objectives, they are difficult to enforce on enterprises in the informal economy, and vulnerable to corruption. Success factors are the ability of governments to collect revenues, and the ability to enforce sanctions in place of non-compliance.
- **Economic instruments in focus:** The instruments introduced are: a) Environmental taxes to make polluters pay for societal costs; b) Fees and user charges to charge users for environmental goods and services; c) Certificate trading schemes to create markets for environmental goods and services; d) Green/Sustainable procurement to create demand for eco-efficient goods and services.

**Exercise**  
35 min

**Group discussion:**

- What products/services can be considered for Green Public Procurement in China/your region?
- What products/services offer the best opportunities for advancing SCP in China/your region?

**Promote4**  
1:00 hr

**Cooperation Instruments: Initiating cooperation initiatives**

**Presentation**  
25 min

- **Introducing cooperation instruments:** Beyond traditional regulatory instruments and market-based instruments, governments also have a wide range of cooperation instruments at their disposal. Their strength lies in the flexibility, but they require active contribution from businesses and other stakeholders.
- **Cooperation instruments in focus:** Two instruments are analysed here in more detail. Technology Transfer programmes aim to make technology available to local businesses. Voluntary Agreements aim to improve companies' environmental conduct and performance beyond existing legislation and regulations, like in the case of Clean Production Commitments in Chile.

**Exercise**  
35 min

**Group discussion:** Each group selects one of the cooperation instruments introduced in the presentation and discusses the following questions:

- What needs to be done to introduce the selected cooperation instrument in China/your region?
- Which individuals and organisations need to be involved?
- Which individuals and organisations have the best opportunity to take the lead?
- Who should make an action plan?

**Promote5**  
1:00 hr

**Educational and Research Instruments: Educating and creating awareness**

**Presentation**  
25 min

- **Introducing Educational and Research instruments:** Educational and research instruments aim at creating innovative, less resource-intensive products and services. At the consumption level, they strive for behavioural changes in the public.
- **Educational and Research instruments in focus:** Concrete instruments are introduced for fostering research and development, and to improve education and training for resource efficiency.

**Exercise**  
35 min

**Individual exercise:** Think about the following questions individually, followed by group discussion:

- What groups or organisations **within** the municipal/local government authorities are the most important for educating about the Circular Economy?

- Why are these groups especially important for education about the Circular Economy?
- What groups or organisations **outside** the municipal/local government authorities are most important for educating about the Circular Economy? These could be specific industrial sectors or certain groups in society such as young people.
- Why are these groups especially important for education about the Circular Economy?

**Promote6**  
1:00 hr

### Informational Instruments: Providing targeted information

**Presentation**  
25 min

- **Introducing informational instruments:** Information instruments are environmental policy tools that seek to influence the behaviour of firms and individuals by providing targeted information.
- **Informational instruments in focus:** Four instruments are introduced in this category. First, labelling for goods and services can enable customers to make sustainable decisions. Second, information programmes for industry can be used to support sustainable production, and information targeted at consumers can help to protect consumers and change their behaviour. Last, public reporting and awards for informing citizens, community leaders and officials can help to create an enabling environment for sustainable consumption and production.

**Exercise**  
35 min

#### Group discussion:

- What information instrument is your department best able to implement to promote the Circular Economy? Why?
- What other department should be involved to improve the chances of success? Why is this other department the best partner?

**Promote7**  
1:15 hr

### Bringing the pieces together: Setting up the framework and designing a sound policy mix for China

**Presentation**  
20 min

- **What is a sound policy mix?** A sound policy mix should address clearly articulated objectives with policy measures that have the greatest chances of success by applying a mix of mutually supporting approaches. The policy mix should consider the resources of government to implement, evaluate and enforce the policy and the ability of the regulated parties to achieve the policy objectives.
- **Issues to consider:** *Incentives* for companies to contribute to policy objectives under existing framework conditions and *ability* of companies to respond to policy instruments in an adequate way.
- **Policy matrix:** Helps to identify policies that respond to the root causes of environmental problems (lack of incentives / lack of ability).

**Promote8**  
15 min

### Summary of 'Promoting Circular Economy – Measures & Instruments'

**Presentation**  
15 min

- **That was it:** Overview slide on all modules of Day 2
- **What you learned:** Collection of key learning's and insights from the participants?
- **What will follow:** Issues for Day 3

## Day 3 'Implementing Circular Economy – Methods and Action Steps'

Objectives for day 3:

- Workshop participants understand how to systematically set priorities, assess policy opportunities, coordinate necessary actions and to implement, evaluate and communicate the chosen policy package
- Workshop participants have a set of tools at hand (Priority Finder, Material Flow Analysis, Life-Cycle Assessment, Benefit-Cost Analysis, etc) to set priorities, assess policy opportunities and implement policy packages
- Workshop participants are aware of the policy cycle and the importance of coordinated actions to make a policy package and/or policy modifications successful

### Implement1 'Implementing Circular Economy - Methods & Action Steps'

- Presentation**  
15 min
- **What has been:** Summarising Day 2
  - **What it is all about:** Presenting the objectives of Part 3
  - **What will come:** Introducing the modules in Part 3 and their basic content

### Implement2 Setting Priorities: Analysis of current production and consumption patterns

1:30 hr

This module introduces methods for determining political priorities and topics that require attention and action by policy makers.

- Presentation**  
30 min
- **Introducing priority setting:** Introduces reasons and a framework for priority setting
  - **Stock taking:** Determines broad patterns and topics prevalent in a specific region
  - **Assessing:** The principles and broad methodology behind a range of tools for Material Flow Analysis are introduced. Concepts introduced are Ecological Footprint Analysis, the Accounting for Material Flows, and the 'Material Input per Service Unit (MIPS)' methodology. It is also shown how the results can be linked to economic indicators to create 'eco-efficiency' indicators.
  - **Focussing:** Introduces other factors that might be considered when setting priorities.

#### Exercise Group Discussion:

60 min

- Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector.
- Consider environmental impacts that can result from the resource flows.
- Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.

### Implement3 Assessing Policy Opportunities: Drafting and Analysing Policy Options

1:30 hr

This Module provides an overview on approach to generate a set of policy options ('draft') and evaluate these policy options according different criteria ('analyse').

- Presentation**  
30 min
- **Determining Policy Options:** Four approaches for generating policy options are introduced, including best practice learning, review of political agendas and stakeholder analysis.
  - **Policy Analysis:** Sound analysis of policy options is necessary to achieve the objectives set, address policy trade-offs and build support for the policy measures taken. A set of criteria is introduced and illustrated with two case studies. The criteria come from the areas of effectiveness and efficiency, equity and fairness, incentives for long-run improvement, enforceability and the acceptability in the local context)

- Exercise** 60 min **Group discussion:** Split in the same group as Implement2, and
- Brainstorm potential policy instruments to address one of the resource flows analysed in Implement2
  - Select one policy instruments and briefly analyse the proposed policy responses according to a criteria list provided

**Implement4** 45 min **Implementing the policies: Policy coordination through networks and partnerships**

Implementing policy is concerned with converting 'policy output' (laws, directives) into 'policy impact', e.g. change in behaviour or technology applied. This module shows challenges, and how networks and partnerships for policy coordination can be used to overcome these.

- Presentation** 15 min
- **Challenges in policy implementation:** The factors hindering policy implementation include lack of commitment of public bodies, a lack of coordination between different agencies, lacking capacity to implement policy measures taken, and finally corruption. Success does not only depend on the implementing authority, but also on the behaviour of the target group of the policy, of other public agencies and a wider set of stakeholders.
  - **Opportunities to improve policy implementation:** Four options are presented to improve policy implementation. These include inter-agency cooperation and partnership in governments, stakeholder approaches to enforcement and the decentralisation of implementation tasks. Last, measures can be taken to increase information availability and transparency.

- Exercise** 30 min **Group discussion:** Split in the same group as Implement3, and discuss potential options to improve implementation of CE policy instruments, especially considering opportunities for coordination and partnership

**Implement5** 45 min **Following up policy implementation: Indicators, evaluation and corrective action**

Confirm that policy has been implemented as intended, determine if the desired policy objectives are being achieved and recommend adjustments to the policy mix

- Presentation** 15 min
- **What to monitor:** Describes which indicators can be monitored for following up policy implementation, including a) the state and development of SCP patterns, b) the measures taken to implement policy instruments and c) the results achieved by policy instruments.
  - **Indicator and target development:** Introduces principles for developing indicators and targets for SCP policy implementation
  - **Monitoring and corrective action:** Shows how indicators can be monitored through internal or external mechanisms, and how the results can be used to influence different stages of the policy cycle.
  - **Case studies:** Introduces various approaches for monitoring SCP policy implementation.

- Exercise** 30 min **Group discussion:**
- Divide into groups
  - Brainstorm a list of indicators for Circular Economy.
  - Discuss relevance and feasibility of the indicators in the group

**Implement6** 30 min **Summary of 'Implementing CE - Steps for taking successful action'**

- Presentation** 15 min
- **That was it:** Overview slide on all modules of Day 3
  - **What you learned:** Collection of key learning's and insights from the participants
  - **What else:** Issues the participants found lacking



## Closing

### Closing Session, Feedback and Provision of Certificates

- Presentation** 60 min
- **Looking back:** Overview on all three parts and their modules
  - **Training evaluation sheet:** Dissemination of a training evaluation sheet, asking the participants on key learning's, what they liked, what they would improve, etc.
  - **Participation certificate:** Provision of a participation certificate to the participants

## Workshop Materials

The materials for the training workshop include:

<b>Policy Framework Study</b>	Key trends in Europe and to be handed out to participants as background reading for the training
<b>Presentations &amp; exercises</b>	Files in PowerPoint format printed in hard copy (suggest 2 slides per page) provided to workshop participants to make notes during workshop.
<b>Exercises</b>	Files in word format as worksheets for participants (possibly include within booklet/bound copy with slides)
<b>Questionnaire</b>	Feedback questionnaire
<b>Training Certificates</b>	Certificate certifying that workshop participants successfully attended the training

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## Further reading and information sources for trainers

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- CEC Commission of the European Communities ((2002): Sixth Community Environment Action Programme; (6EAP) published in Official Journal of the European Communities L 242 of 10/9/2002.
- CEC Commission of the European Communities (2003): *Integrated Product Policy: Building on Environmental Life-Cycle Thinking*, COM(2003) 302 final, Brussels 2003.
- CEC Commission of the European Communities (2003): *Towards a Thematic Strategy on the Sustainable Use of Natural Resources*, COM(2003) 572 final, Brussels 2003.
- CEC Commission of the European Communities (2003): *Towards a Thematic Strategy on the Prevention and Recycling of Waste*, COM(2003) 301 final, Brussels 2003.
- CEC Commission of the European Communities (2004): *Stimulating Technologies for Sustainable Development: An Environmental Technologies Action Plan for the European Union*, Communication from the Commission to the Council and the European Parliament, COM (2004) 38, Brussels 2004.
- CEC Commission of the European Communities (2004): *Towards a Thematic Strategy on the Urban Environment*, COM(2004) 60 final, Brussels 2004.
- Chen Demin (2004): *The key point of circular economy is improving resource efficiency*, In: Journal of Population, Resource and Environment, 2004.
- China Council for International Cooperation on Environment and Development, Task Force of Circular Economy and Cleaner Production (2003): *Strategy and mechanism study for promotion of Circular Economy and Cleaner Production in China*, Beijing 2003.
- CSCP, Deutsche Gesellschaft für Technische Zusammenarbeit – GTZ, Wuppertal Institute (2006): *Compendium of Policy Instruments for Resource Efficiency, Towards Sustainable Consumption and Production*.
- European Environment Agency (2005): *Sustainable use and management of natural resources*, EEA Report, No. 9/2005, Copenhagen 2005.
- German Government (1994): *Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal*, 1994.
- Guiyang Municipal Government (2006): *The 11<sup>th</sup>-Five Year Plan of Economic and Social Development of Guiyang city*, Guiyang, China 2006.
- Guiyang Municipal Government (2006): *The master plan for building eco-city by adopting Circular Economy approaches in Guiyang city*, Guiyang, China 2006.
- Guiyang Municipal Government (n.a): *The master plan for building eco- economy city of Guiyang (Draft Version)*, Guiyang.

Illge, Lydia (2003): *The Economy of Closed Material Cycles: Environmental-Economic Concepts and Policies*, DIW Research Note, Berlin 2003.

Indigo Development (2005): *China's Circular Economy Initiative*, 2005.

Matthews, E., Bringezu, S., Fischer-Kowalski, M., Huetler, W., Kleijn, R., Moriguchi, Y., Ottke, C., Rodenburg, E., Rogich, D., Schandl, H., Schuetz, H., van der Voet, E., Weisz, H. (2000): *The weight of nations: Material outflows from industrial economies*. World Resources Institute, Washington 2000.

Moll, St., Bringezu, St., Schütz, H. (2005): *Resource Use in European Countries: An estimate of materials and waste streams in the Community, including imports and exports using the instrument of material flow analysis*, Wuppertal Report, December 2005.

Ren Yong, Zhou Guomei (2005): *Development Patterns and Policy of Circular Economy in China*, Journal of Population, Resource and Environment, 2005.

State Environmental Protection Administration of China SEPA (2003): *Selection of Circular Economy Legislation*, Science and Technology Publication of China, Beijing 2003.

Task Force of Guiyang-UNEP Demonstration Project (2004): *Summary Report of Guiyang-UNEP Demonstration Project of Sustainable Production and Consumption – Local Government Capacity Building*, 2004.

United Nations Environment Programme (2005): *Advancing Sustainable Consumption in Asia*, A Guidance Manual.

Xiaofei Pei (n.a.): *Overview of the Circular Economy in China*, Discussion paper.

Zhang Kai (2004): *Rethinking the circular economy in China*, In: Journal of Population, Resource and Environment, 2004.

Zhou Guomei, Chen Yanping, Ren Yong (2005): *International Experiences on Promoting Circular Economy and Implications to China*, Journal of Population, Resource and Environment, 2005.



# Training Packages on Policies of SCP and Circular Economy

Policy Reinforcement for Environmentally Sound and Socially

Responsible Economic Development in China (PRODEV)



The First Day

# Welcome

to PRODEV training!



# Introduction

Making Circular Economy happen

# Policy reinforcement for Circular Economy

.....  
What is Prodev?

.....  
What is Prodev?

.....  
What is the training about?

.....  
What will happen?  
.....

# What is Prodev?

## Introduction to the project

# ProDEV

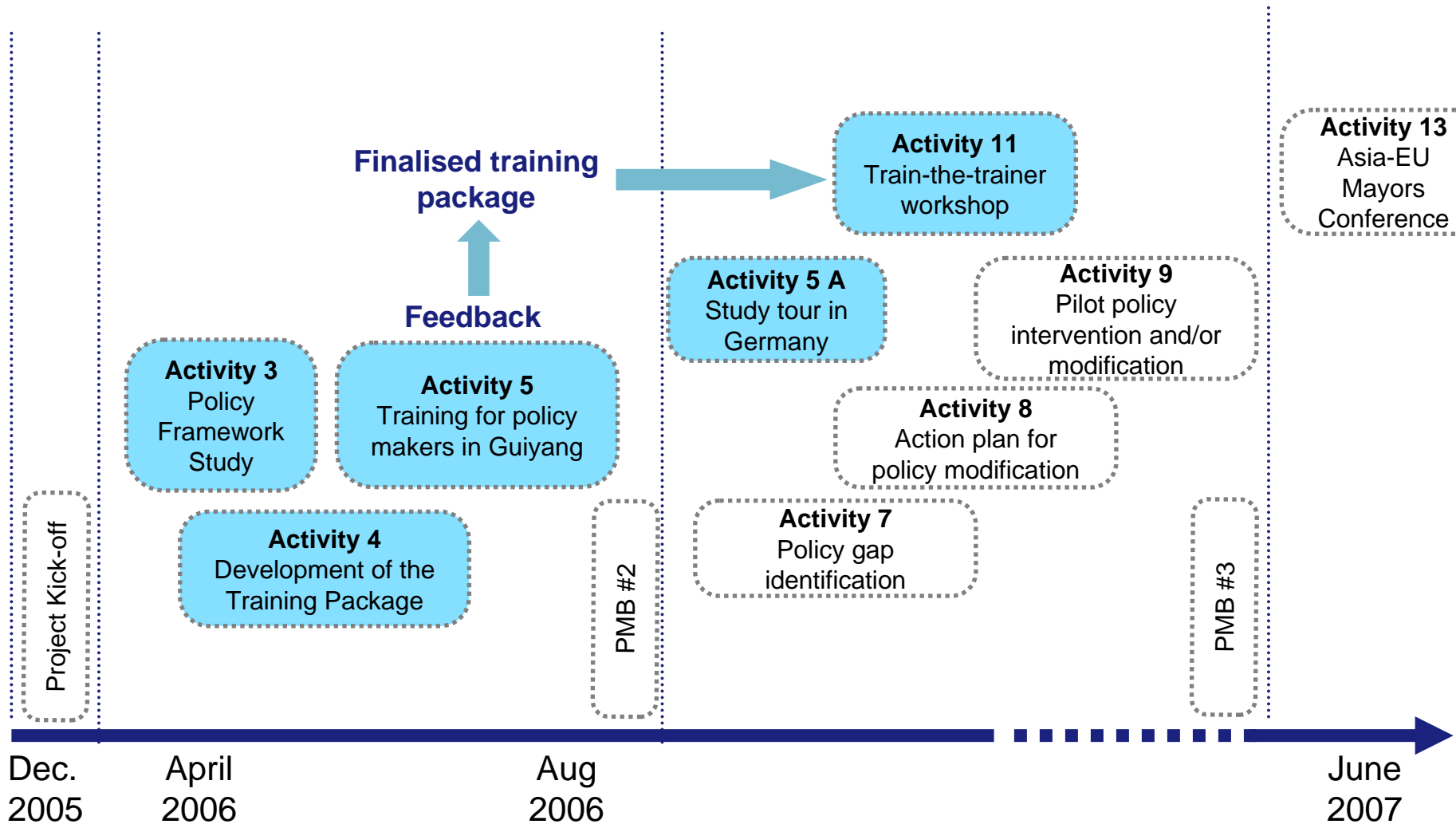
Policy Reinforcement for Environmentally Sound and Socially Responsible Economic Development in China

<p>Objectives</p>	<ul style="list-style-type: none"> <li>• Institutional and technical capacities to develop sound and socially responsible economic development in China</li> <li>• Development of policy interventions to forge a path to Circular Economy</li> <li>• Mainstreaming the Circular Economy concept</li> <li>• Improve understanding of policy-making in China and Europe</li> <li>• Create information links and co-operation among local authorities</li> </ul>
<p>Project Partners &amp; Stakeholders</p>	<ul style="list-style-type: none"> <li>• UNEP</li> <li>• CSCP/Wuppertal Institute</li> <li>• Guiyang Government</li> <li>• China State Environmental Protection Administration (SEPA)</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: center;"> <p>Science Centre North Rhine-Westphalia</p> <p><small>Institute of Work and Technology</small></p>  <p><small>Institute for Culture Studies</small></p> <p>Wuppertal Institute for Climate, Environment, Energy</p> </div>   </div>
<p>Funded by</p>	<ul style="list-style-type: none"> <li>• EuropeAid - Asia Pro Eco Programme</li> </ul> <div style="text-align: right;">   </div>



# Prodev Timeline

## Overview of main project activities and time plan



# Policy reinforcement for Circular Economy

What is the training about?

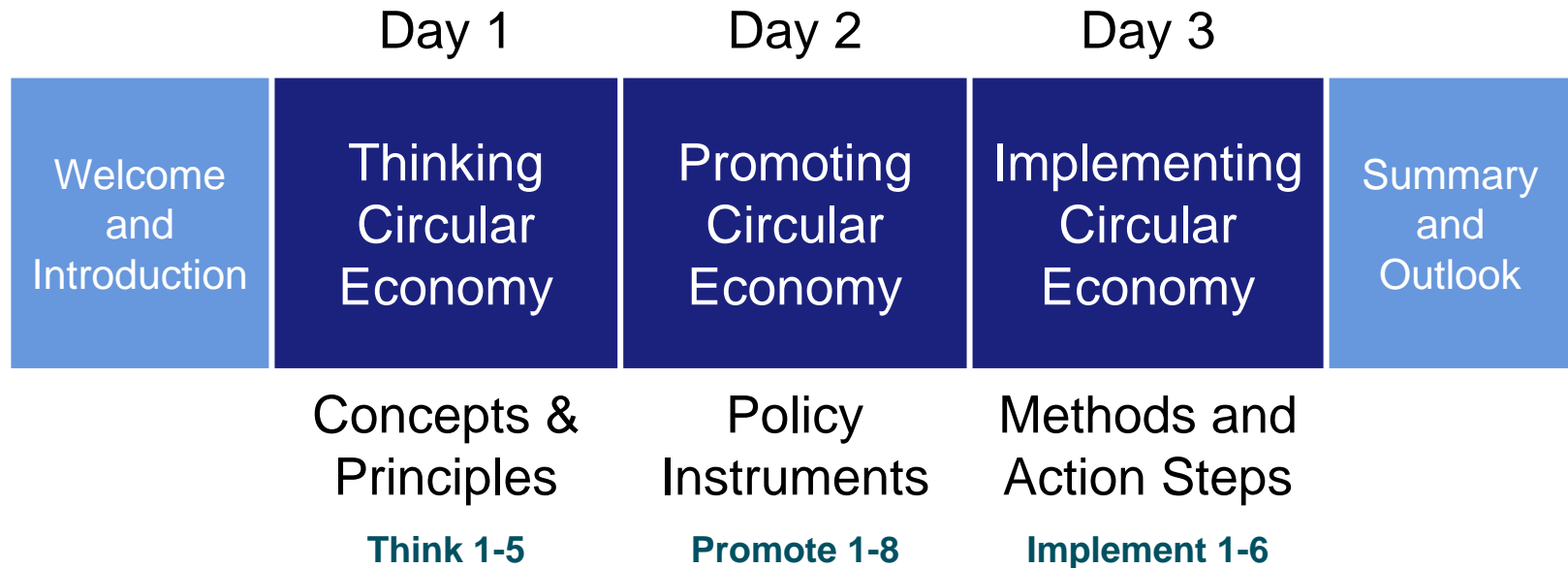
What is Prodev?

What is the training about?

What will happen?

# What is the training about?

## Introducing the three training days



# What is the training about?

## Introducing the three training days

# Day 1

## ‘Thinking Circular Economy -

Key principles of Circular Economy (CE) and Sustainable Consumption and Production (SCP)  
Creating knowledge and awareness of CE and SCP and exploring the ‘CE/SCP way of thinking’

# Day 2

## ‘Promoting Circular Economy

Overview on key measures, instruments and strategies that policy makers can apply to build a sound and successful framework for Circular Economy and sustainable consumption and production patterns

# Day 3

## Implementing Circular Economy -

Key methods and guiding action steps for policy makers helping to make CE and SCP happen  
Setting Priorities - Assessing Policy Opportunities - Planning the Actions - Implementing the policy package

# Day 1

## ‘Thinking Circular Economy - Concepts & Principles’

<b>Think1</b>	Setting the stage: ‘Thinking CE - Concepts and Principles’
<b>Think2</b>	World-wide trends and European/Chinese success stories on CE and SCP
<b>Think3</b>	Opportunities for China: The key results from the policy framework study
<b>Think4</b>	Opportunities for advancing SCP in China
<b>Think5</b>	The SCP policy toolbox: Supporting Governments to address the opportunities ahead
<b>Think6</b>	Summary of ‘Thinking CE - Concepts and Principles’

# Day 2

## ‘Promoting Circular Economy - Measures & Instruments’

<b>Promote1</b>	Overview on ‘Promoting CE - Measures & Instruments’
<b>Promote2</b>	Regulatory Instruments: Setting the rules
<b>Promote3</b>	Economic Instruments: Getting the prices right
<b>Promote4</b>	Cooperation Instruments: Initiating cooperation initiatives
<b>Promote5</b>	Education and Research: Educating and creating awareness
<b>Promote6</b>	Information instruments: Providing targeted information
<b>Promote7</b>	Bringing the pieces together: Setting up the framework and designing a sound policy mix
<b>Promote8</b>	Summary of ‘Promoting CE - Measures & Instruments’

# Day 3

## ‘Implementing Circular Economy - Steps for taking successful action’

<b>Implement1</b>	Overview of ‘Implementing CE - Steps for taking successful action’
<b>Implement2</b>	Setting priorities: Analysis of current production and consumption patterns
<b>Implement3</b>	Assessing the Policy Opportunities: Drafting and Analysing Policy Options
<b>Implement4</b>	Implementing the policies: Policy coordination through networks and partnerships
<b>Implement5</b>	Following up policy implementation: Indicators, evaluation and corrective action
<b>Implement6</b>	Summary of ‘Implementing CE - Steps for taking successful action’

# Policy reinforcement for Circular Economy

What is Prodev?

What is the training about?

What will happen?

What will happen?



# What will happen?

## Presentations and Exercises

# Presentations & Exercises

### Day 1

Think1

Think2

Think3

...

### Day 2

Promote1

Promote2

Promote3

...

### Day 3

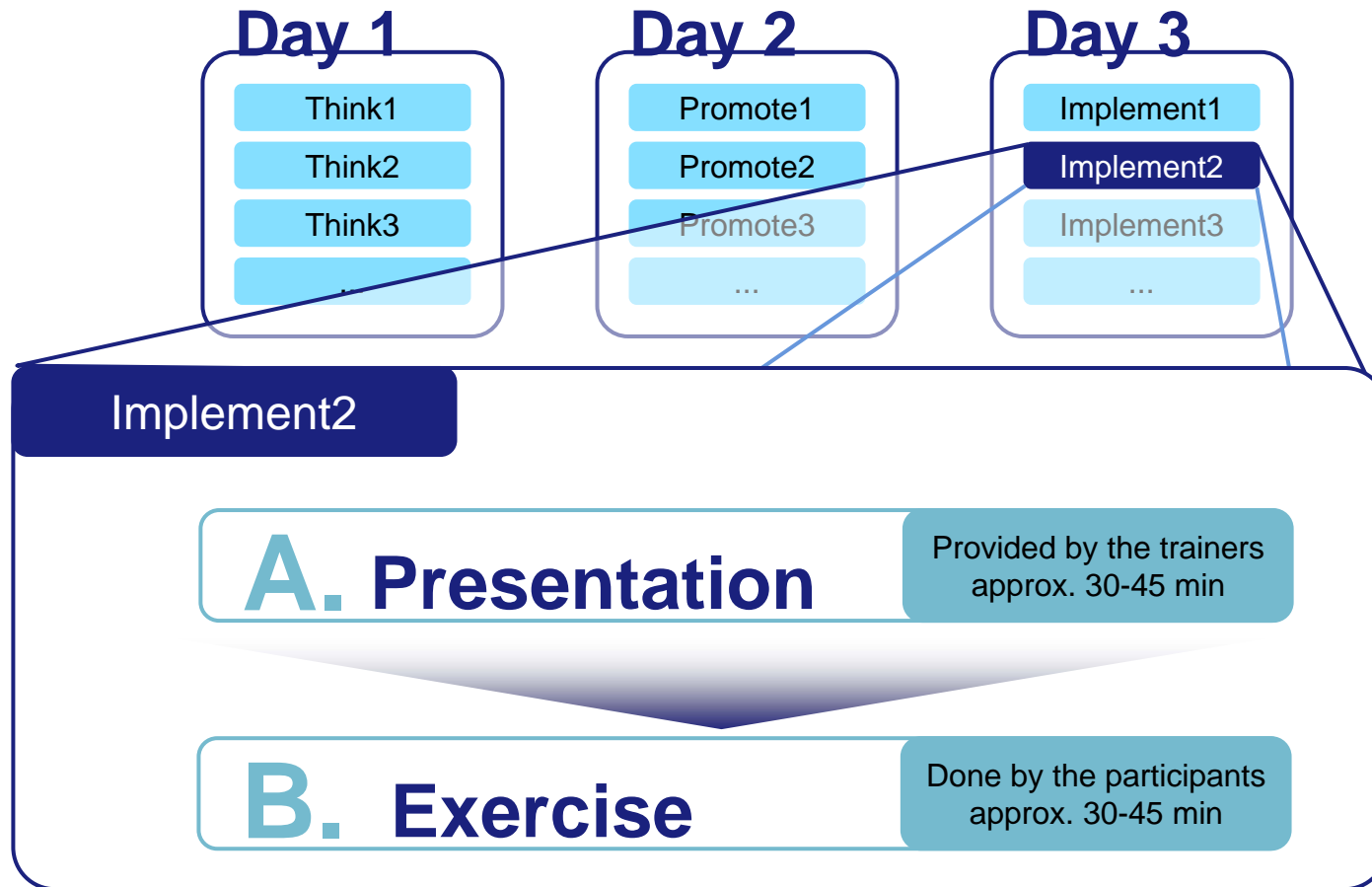
Implement1

Implement2

Implement3

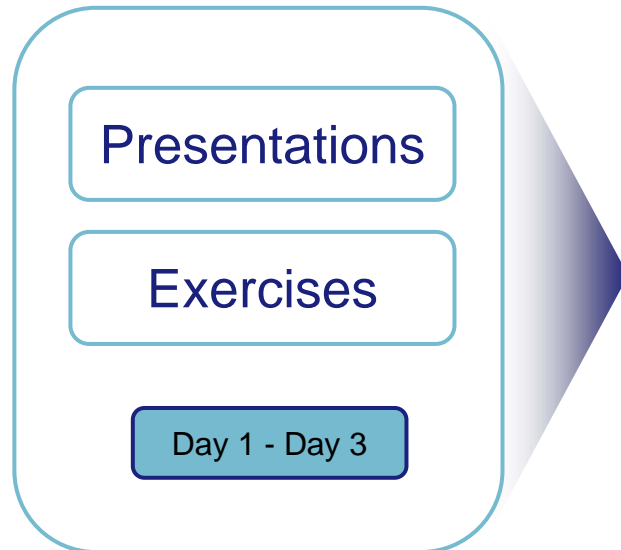
...

# Presentations & Exercises



# Certificate on CE / SCP Training

## Training



## Participation Certificate

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt?  
berichtigt

- Continuous and active participation
- Attendance 3 days
- Provision of feedback form

# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Think1

Setting the stage: 'Thinking Circular Economy – Concepts and Principles'

### Objectives of 'Thinking Circular Economy

- Provide latest state-of-the-art and knowledge on Circular Economy and sustainable consumption and production (SCP) in China, Europe and other world regions
- After Day1 the participants will have identified the major opportunities for Guiyang that arise from CE and SCP activities and will have provided and discussed a number of possible suggestions for successful implementation activities
- Good understanding among the participants on the importance of governments concerning the setting of a sound framework for CE and SCP and good coordination among different departments and bureaus

# Day 1 – Summary

‘Thinking Circular Economy -

Concepts & Principles’

Think2

What is CE /  
SCP and why  
does it  
matter?

Think3

The situation  
in China

Think4

Enabling  
means to  
promote CE /  
SCP

Think5

The role of  
governments

# Day 1

## ‘Thinking Circular Economy -

## Concepts & Principles’

<b>Think1</b>	Setting the stage: ‘Thinking CE - Concepts and Principles’	Objectives and overview for Day1
<b>Think2</b>	World-wide trends and European success stories on CE and SCP	Why resource consumption matters Resource efficiency – the way forward Initiatives for promoting resource efficiency
<b>Think3</b>	Opportunities for China: The key results from the policy framework study	Current status of Circular Economy in China Main results of the policy framework study
<b>Think4</b>	Opportunities for advancing SCP in China	Awareness raising and capacity building Engagement and partnership Technology transfer and development Funding and financing



# Day 1

## ‘Thinking Circular Economy -

## Concepts & Principles’

**Think5** The SCP policy toolbox:  
Supporting Guiyang government  
to address the opportunities  
ahead

### **The importance of governments**

How governments can steer societies towards SCP

Principles for sound SCP policy making

Opportunities for SCP along the policy cycle

### **The SCP policy toolbox**

**Think6** Summary of ‘Thinking CE -  
Concepts and Principles’

Summary for Day1

Outlook Day2

# Let's get started!

# Think2

Setting the stage: 'Worldwide Trends and European/  
Chinese Success Stories on CE and SCP'

# Policy reinforcement for Circular Economy

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Structural Change: The case of Germany

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Structural Change: The case of Germany

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Recent trends: The case of China/Asia

---

The decoupling challenge: Opportunities through resource efficiency

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Circular Economy in China: Opportunities for decoupling

---

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**The Case of our region**

**Ruhr-Area**

**North-Rhine Westphalia,  
Germany**

# The city of Wuppertal

## A collaborating centre with UNEP

Wuppertal



# Rhein-Ruhr-Area, Germany



From resource-based industrial revolution...



...to service-oriented society and high quality living area





# Rhein-Ruhr Area in Germany

## A region of structural changes

Resource-based heavy industry



Heavy pollution problems



End-of-pipe solutions



Input-orientation/ Resource Efficiency



1900

1930

1960

1990

2006



Industry activities



Economic growth



Increased consumption



Waste Recycling/ Resource Efficiency



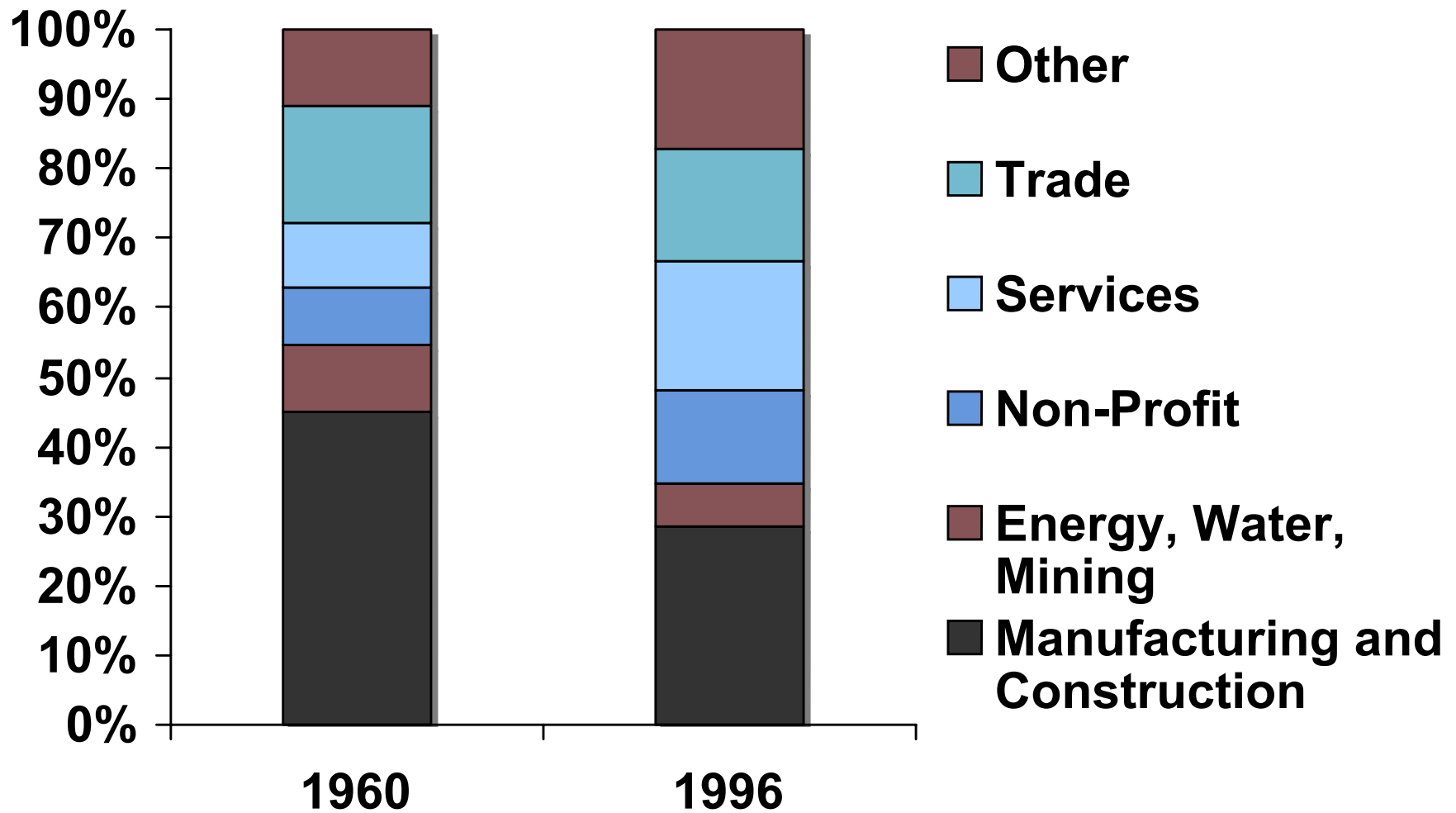
# Rhein-Ruhr Area in Germany

A region of structural changes



# Rhein-Ruhr Area in Germany

## A region of structural changes



Source: Landesamt für Datenverarbeitung und Statistik NRW, Düsseldorf 1998  
(Regional Authorities for Data Processing and Statistics North Rhine-Westphalia)

# From heavy industry area to service-oriented and innovative region...

Zur Anzeige wird der QuickTime?  
Dekompressor 需IFF (Unkomprimiert)?  
benötigt.

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Dekompressor 需IFF (Unkomprimiert)?  
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Zur Anzeige wird der QuickTime?  
Dekompressor 需IFF (Unkomprimiert)?  
benötigt.

# Rhein-Ruhr Area in Germany

A region of structural changes

## Former industrial parks as leisure parks for families...



# Rhein-Ruhr Area in Germany

## A region of structural changes

### Former industrial parks for cultural events...



# Policy reinforcement for Circular Economy

Recent trends: The case  
of China

Structural Change: The case  
of Germany

Recent trends: The case of  
China/Asia

The decoupling challenge:  
Opportunities through  
resource efficiency

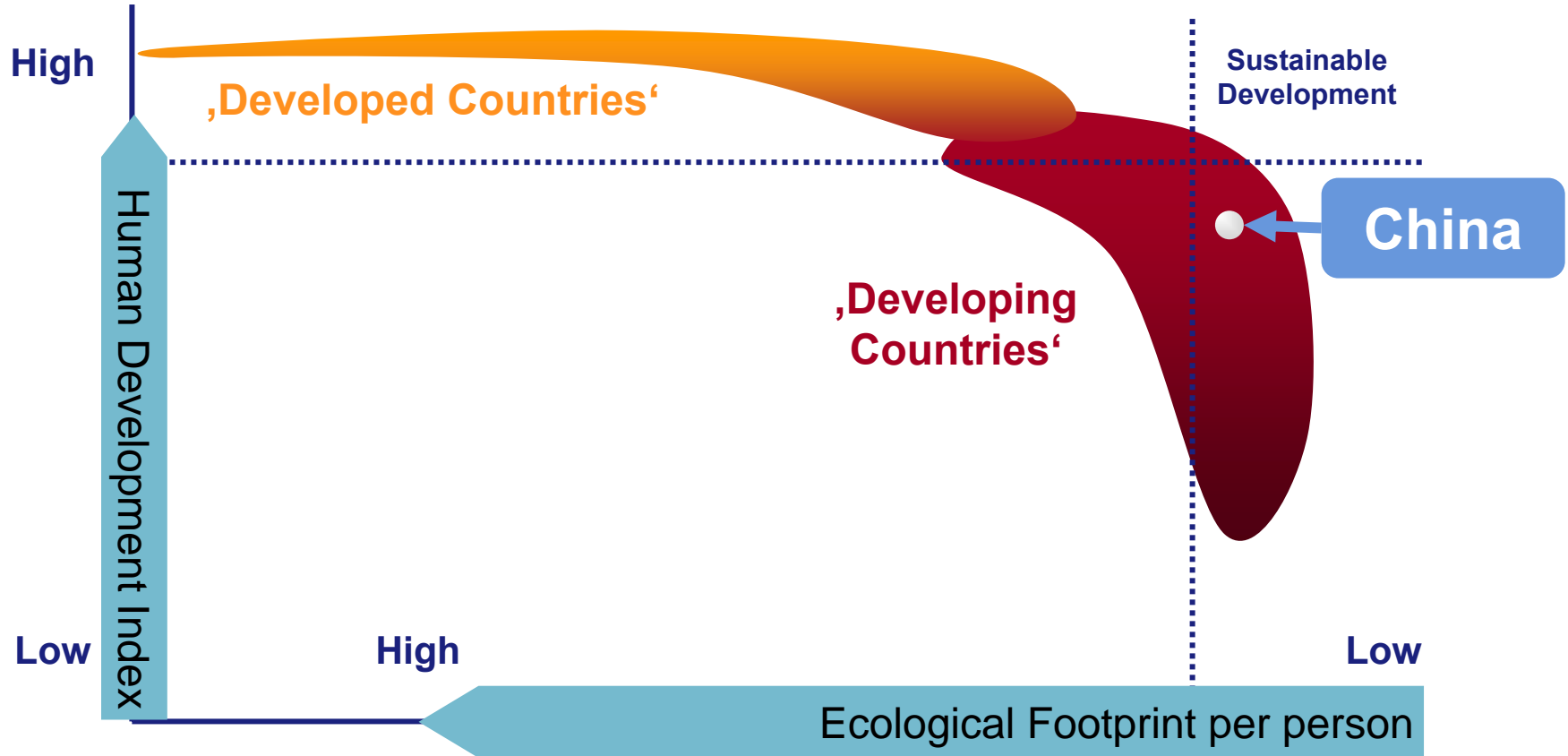
Circular Economy in China:  
Opportunities for decoupling

---

# The case of China: Recent trends and why resource consumption matters

# Why resource consumption matters

## Matching ecological footprint and human development



Source: WWF 2005



# Why resource consumption matters

## Global value chains – local issues

Coffee plantations

QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

Textile production



Street Market

QuickTime?and a F (Uncompressed) decompressor are needed to see this picture.

Electronic waste

QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

## Developing Countries

Resource Extraction

Producers

Retailers

Consumers

End-of-life Managers

## Developed Countries

QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

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QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

Surface Mining

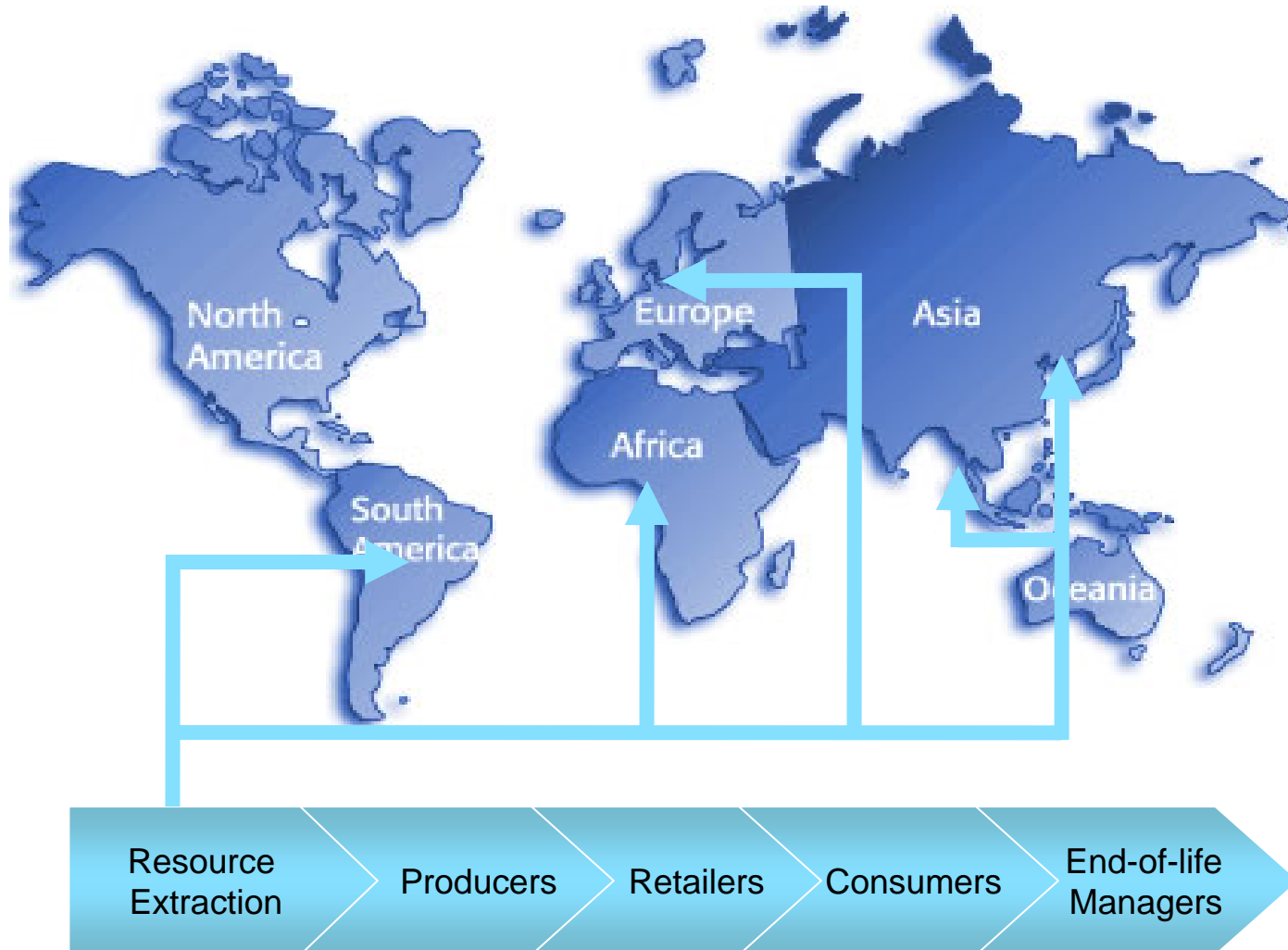
Sugar beet farmer

Shopping Centre

Recycling

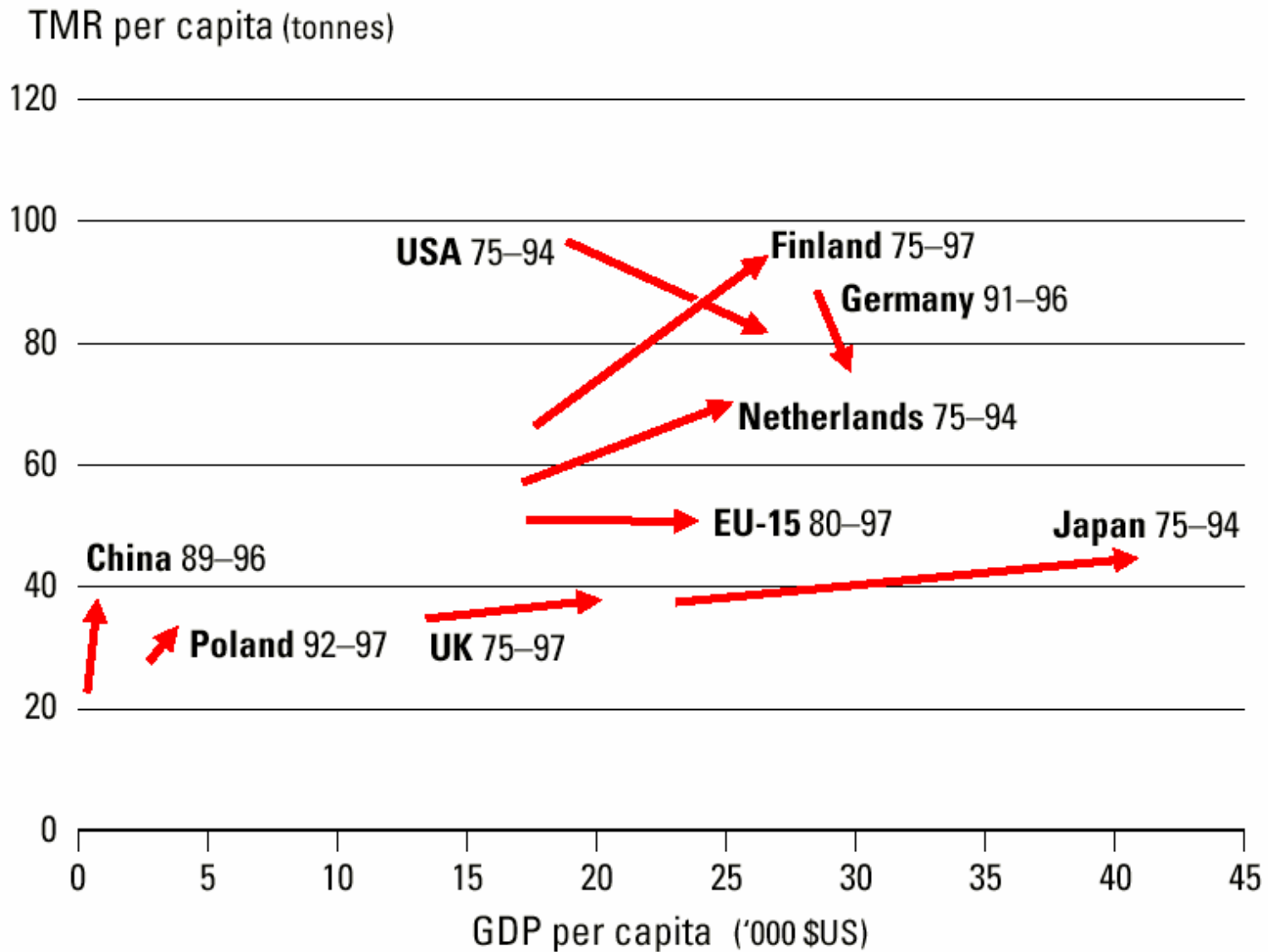
# Why resource consumption matters

## Global supply chains – local issues



# Why resource consumption matters

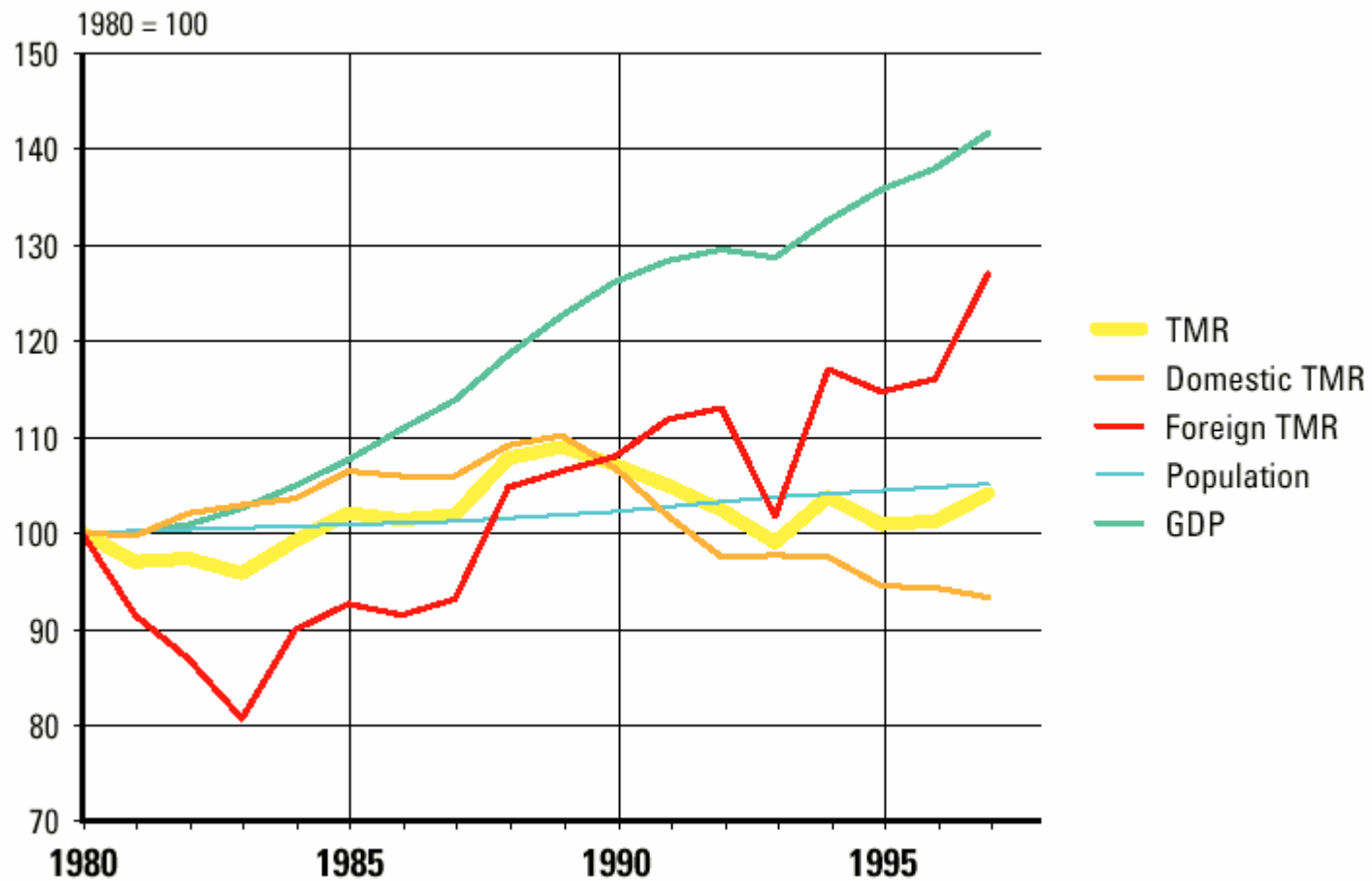
## Trends – decoupling economic growth from resource use



# Why resource consumption matters

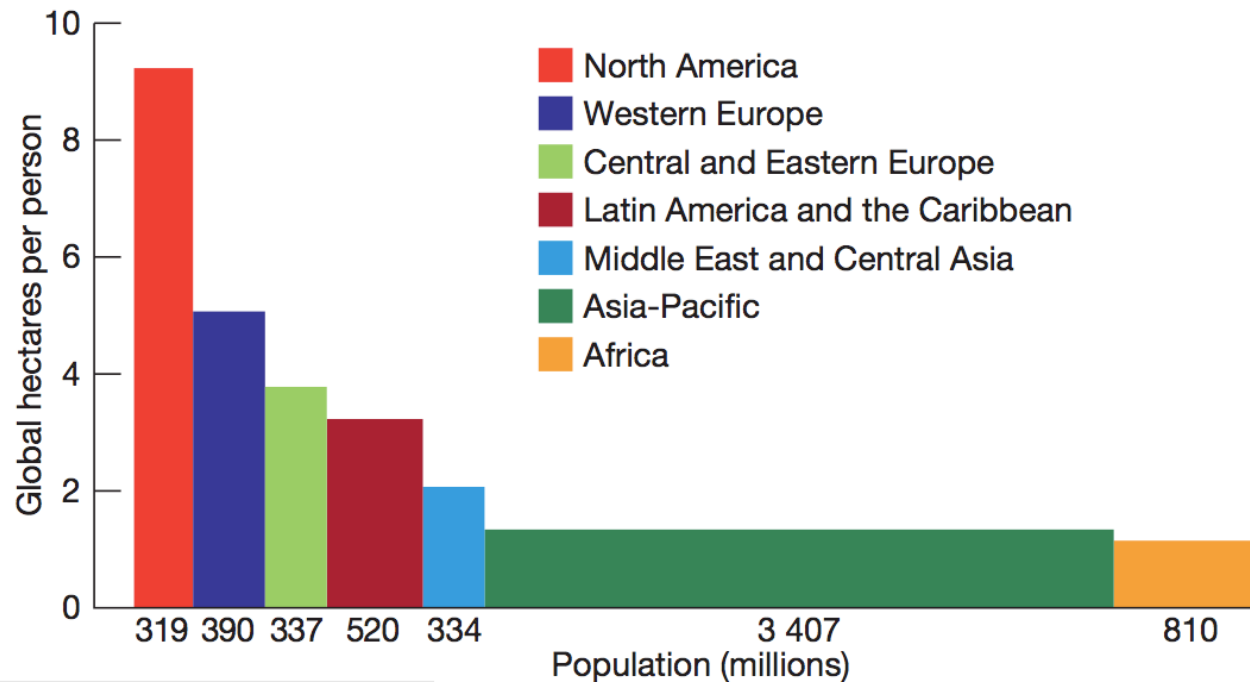
## Increasing evidence for burden shifting – a European Perspective

Global systems of production and consumption lead to growing natural resource extraction from the third world...



# Ecological Footprint by Region

2001

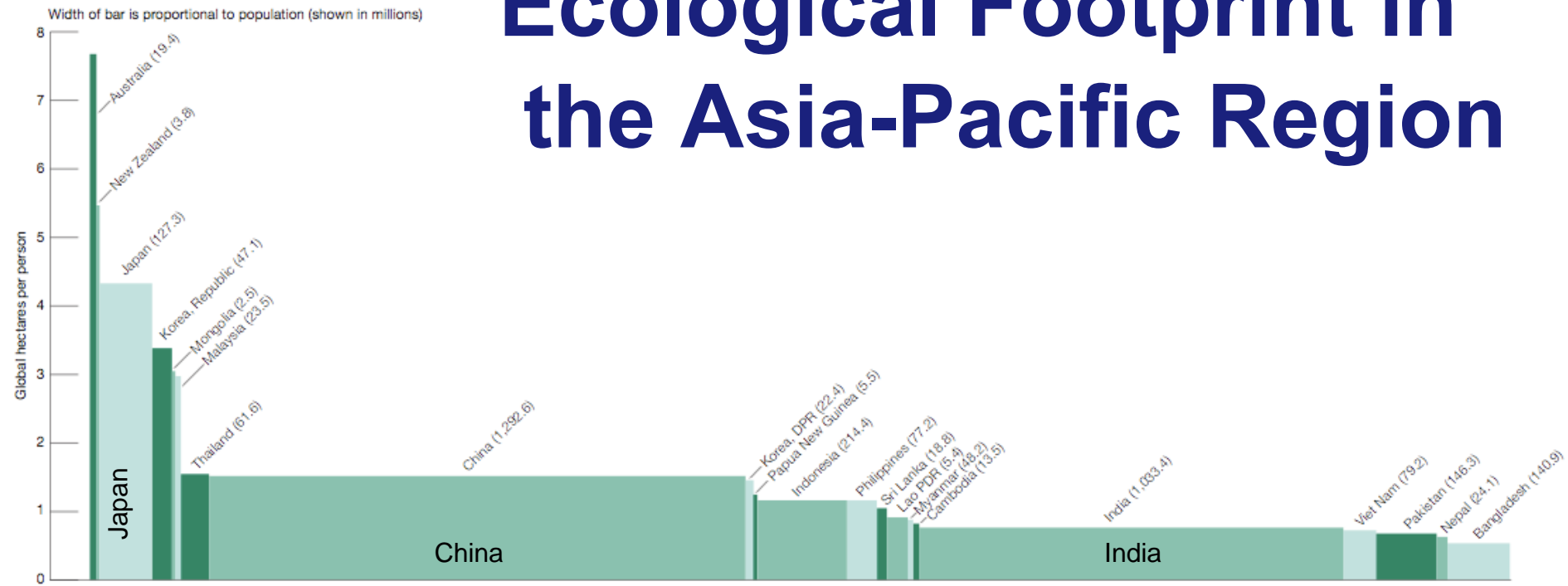


Source: WWF 2005

# Why resource consumption matters

## The regional picture – ecological footprint by country

# Ecological Footprint in the Asia-Pacific Region

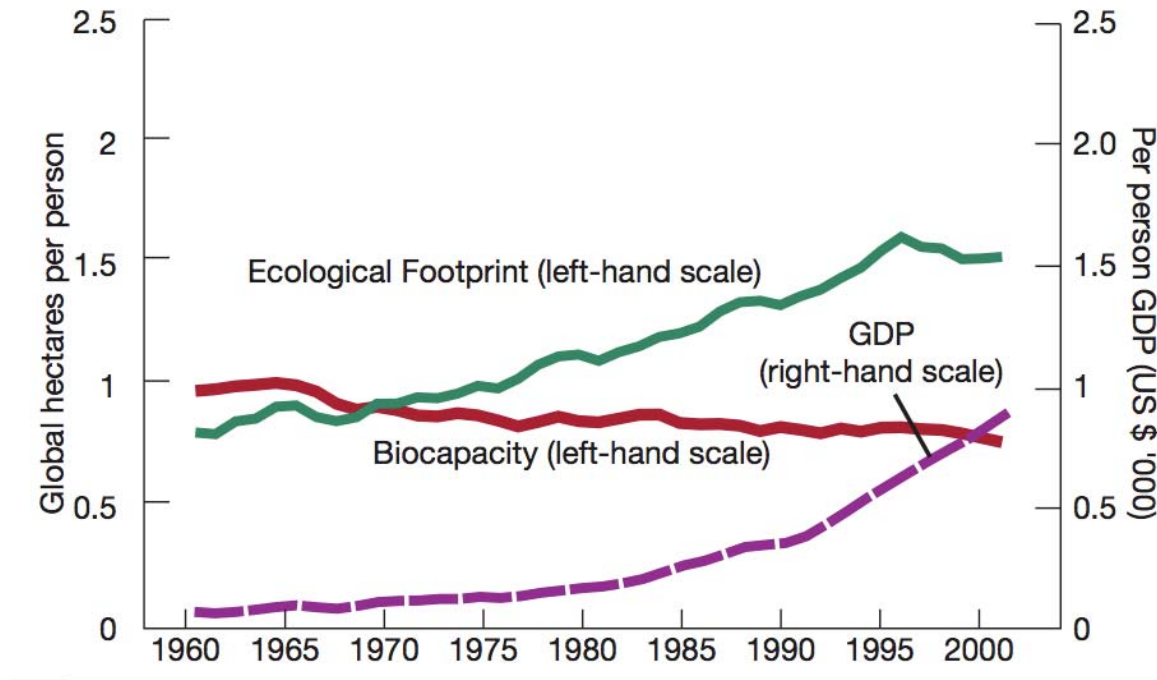


Source: WWF 2005

# Why resource consumption matters

## The national picture – ecological footprint in China

### Ecological Footprint and Bio-Capacity in China, 1961–2001



Source: WWF, 2005

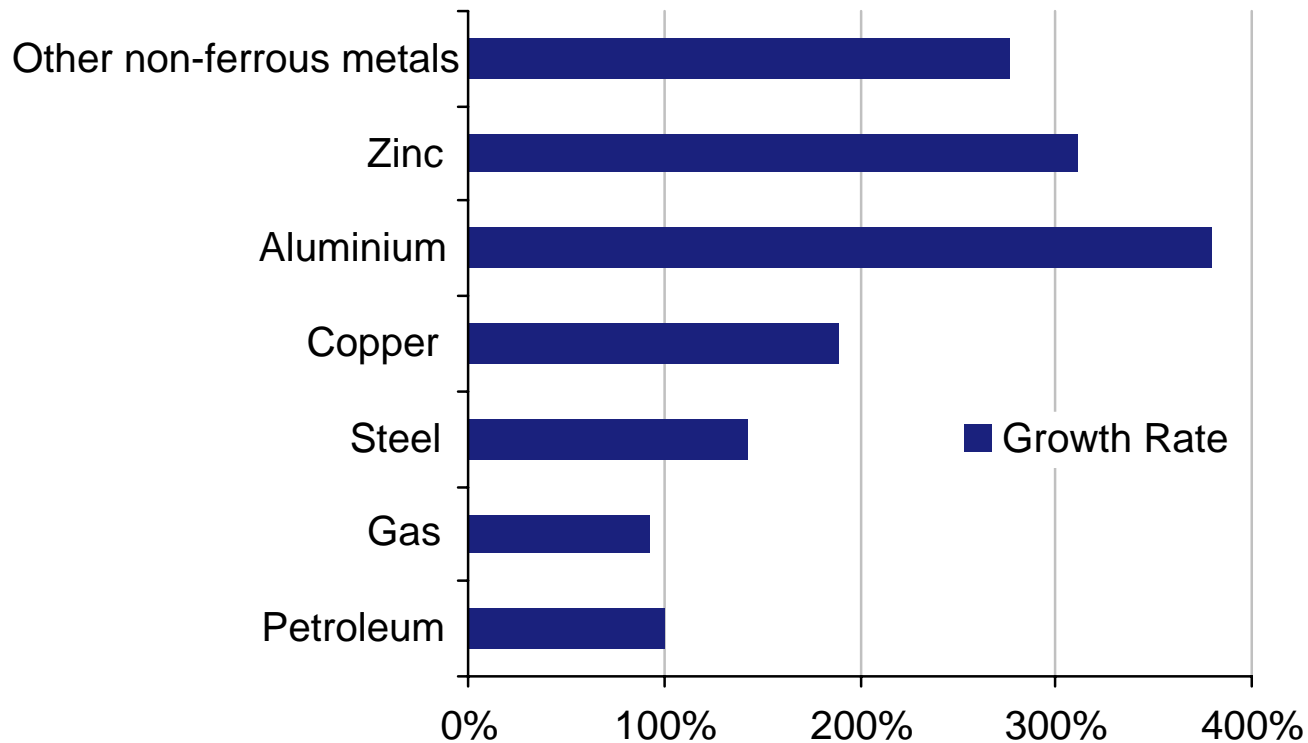
# Why resource consumption matters

## The national picture – resource consumption in China

### Trends in China:

Resource Consumption

Environmental impacts



Source: Background-Paper China Roundtable on Sustainable Consumption



# Why resource consumption matters

## The national picture – environmental impacts in China

### Trends in China:

Resource Consumption

Environmental impacts

90% of inner-city rivers seriously polluted

Only 21% of hazardous industrial waste properly disposed

COD discharge exceeds capacity by 60 %

Emission of CO2 exceeds bearing capacity of atmosphere by 80%

Light pollution in 32%, and heavy pollution in 27% of cities

Source: Background-Paper China Roundtable on Sustainable Consumption

# Why resource consumption matters

## Consumption issues – global consumer class

### ‘Global Consumer Class’ (GCC)



Golden Resources Shopping Mall, China

### What is the GCC?

Consumption patterns similar to those in developed countries (>7000 USD BIP)

### Where is the GCC?

1.7 billion members, of these

- 50% in developing countries
- 362 Million in China and India, more than in Europe

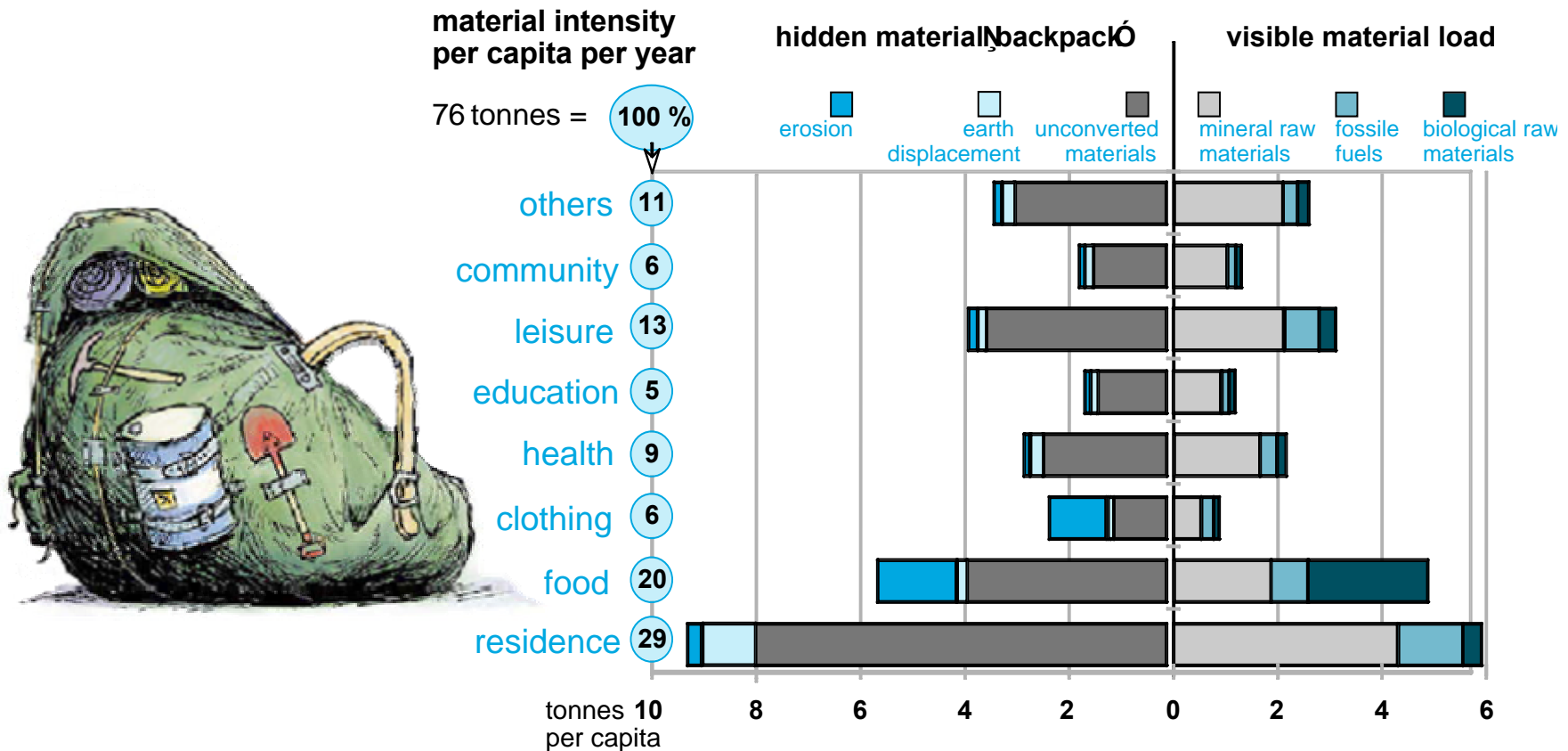
In the next years, the GCC will grow most strongly in developing countries.

Source: Bentley 2003: Leading consumer classes in countries, 2002

# Why resource consumption matters

Consumption issues – Ecological backpack of different need areas

## Most resource consumption hidden in „backpack“



Source: Wuppertal Institute

# Policy reinforcement for Circular Economy

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Structural Change: The case  
of Germany

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Recent trends: The case of  
China/Asia

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The decoupling challenge:  
Opportunities through  
resource efficiency

The decoupling challenge:  
Opportunities through  
resource efficiency

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Circular Economy in China:  
Opportunities for decoupling

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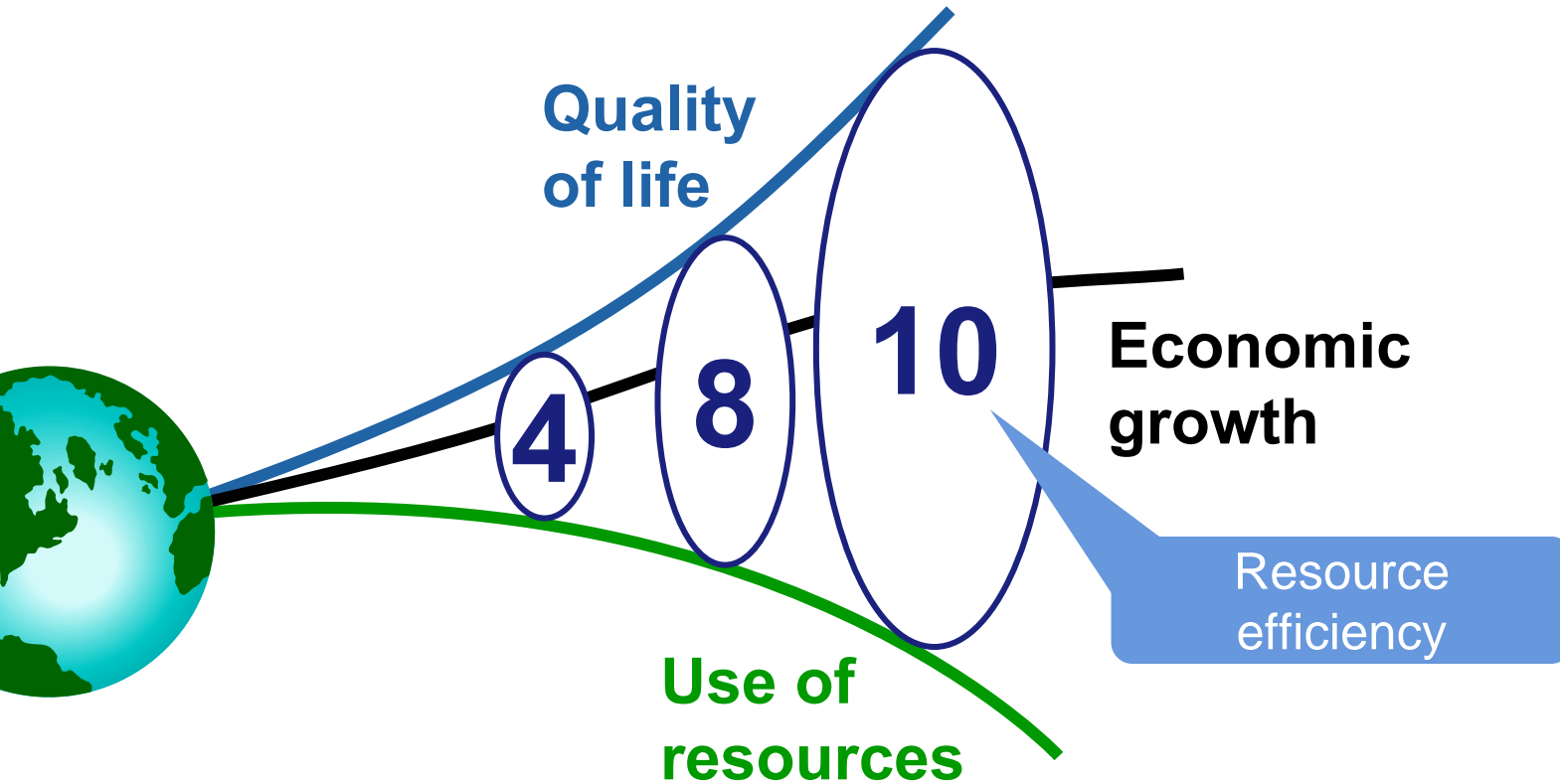
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# The decoupling challenge

## Resource efficiency as the way forward

# The decoupling challenge

## National goals for raising resource efficiency



## Resource-Efficiency in national sustainability agendas

**Netherlands:** Factor 4

**Austria:** Factor 10

**Sweden:** Factor 10 (within next 25 to 50 years)

**Germany:** 2.5 fold increase in raw material productivity (from 1993 to 2020)

UN General Assembly: Factor 4  
in the next two to three decades

# The decoupling challenge

## European framework for resource productivity



### Possible Policies

#### Supply

- Know-how (education)
- Technology (R&D)
- Diffusion & transfer
- Voluntary agreements

#### Demand

- Public procurement
- Consumer information & access
- Stakeholders' rights

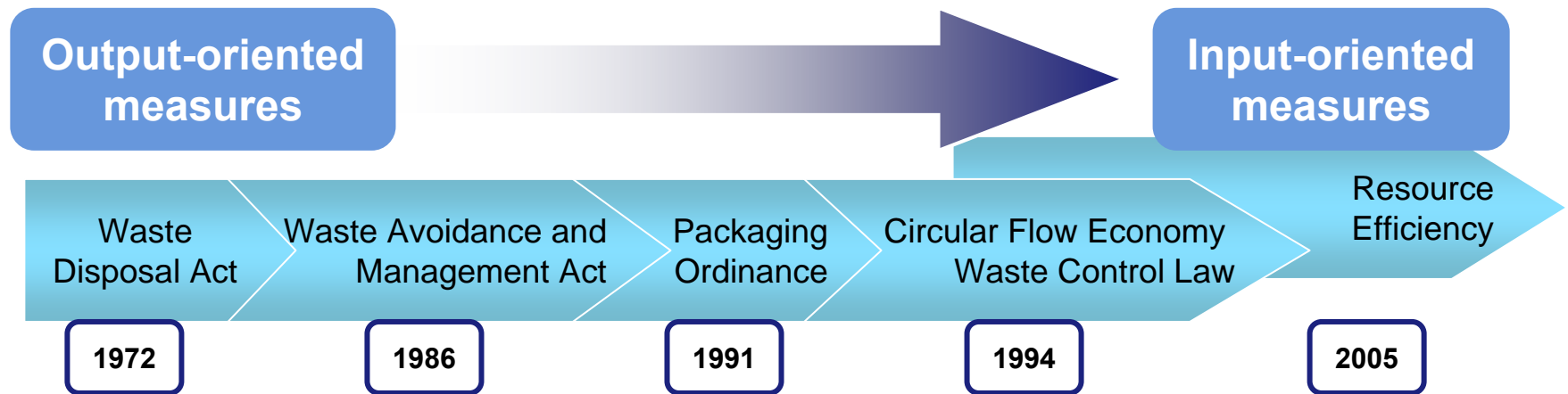
#### Market Structure

- Targets
- Material input taxes
- Standards
- Reporting, accountability

# The decoupling challenge

## Case Study: Circular Economy Law, Germany (1)

# Circular Economy Law, Germany



### Circular Flow Economy Waste Law

- Framework regulation
- Make manufacturers responsible for the entire life cycle of a product
- The owners of generators of waste are responsible for waste avoidance, recovery and disposal
- Source of further statutory ordinances and voluntary agreements



# Circular Economy Law, Germany

### Dual Disposal System

Producers



Distributors

Collection of waste packaging directly from private households, the sorting of this waste into material groups, and the recycling of these materials



1993

### The Green Dot ('Der Grüne Punkt')

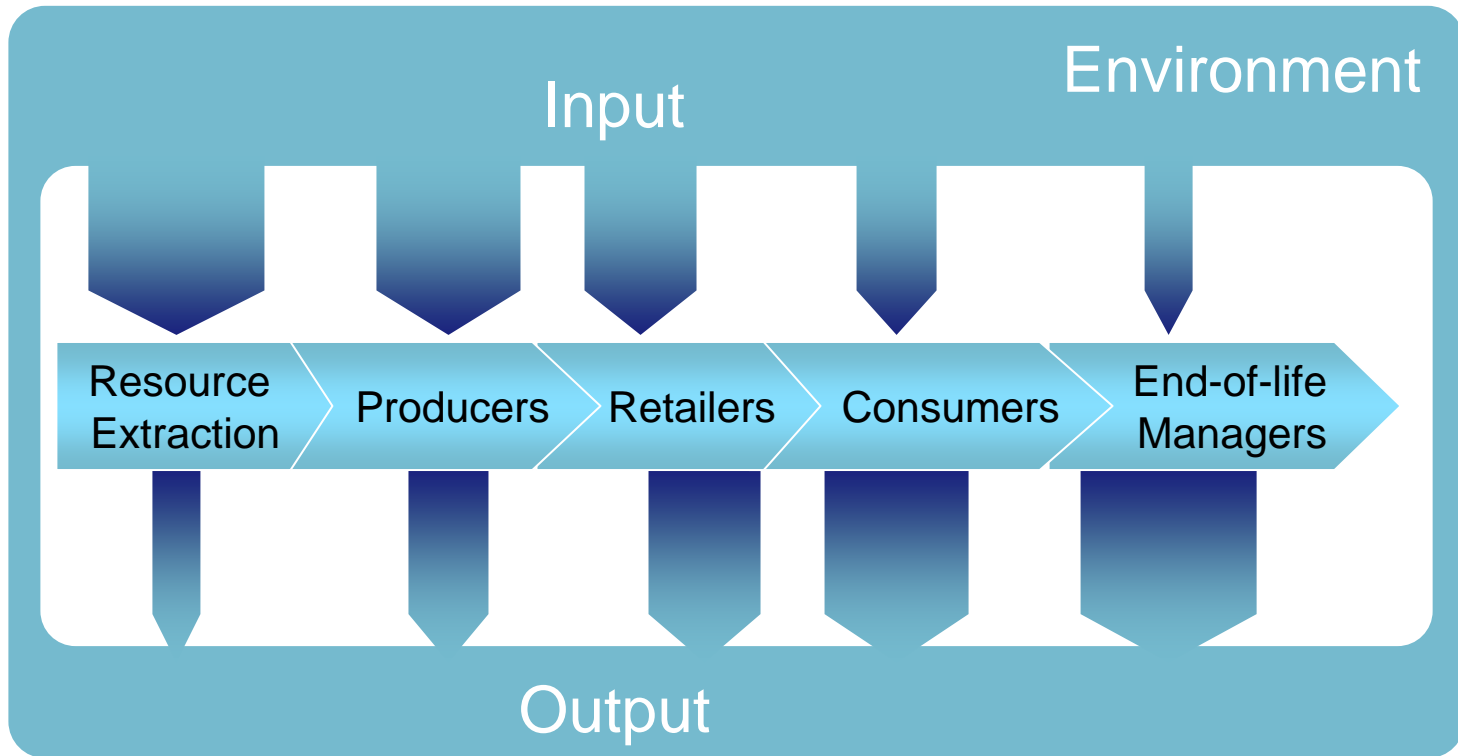
License label printed directly on the packaging and showing that producers paid for the packaging management

Over 20 millions tons of used packaging recycled- the consumption of packaging was reduced by 1,3 millions of tonnes (compared to 1991)

# The decoupling challenge

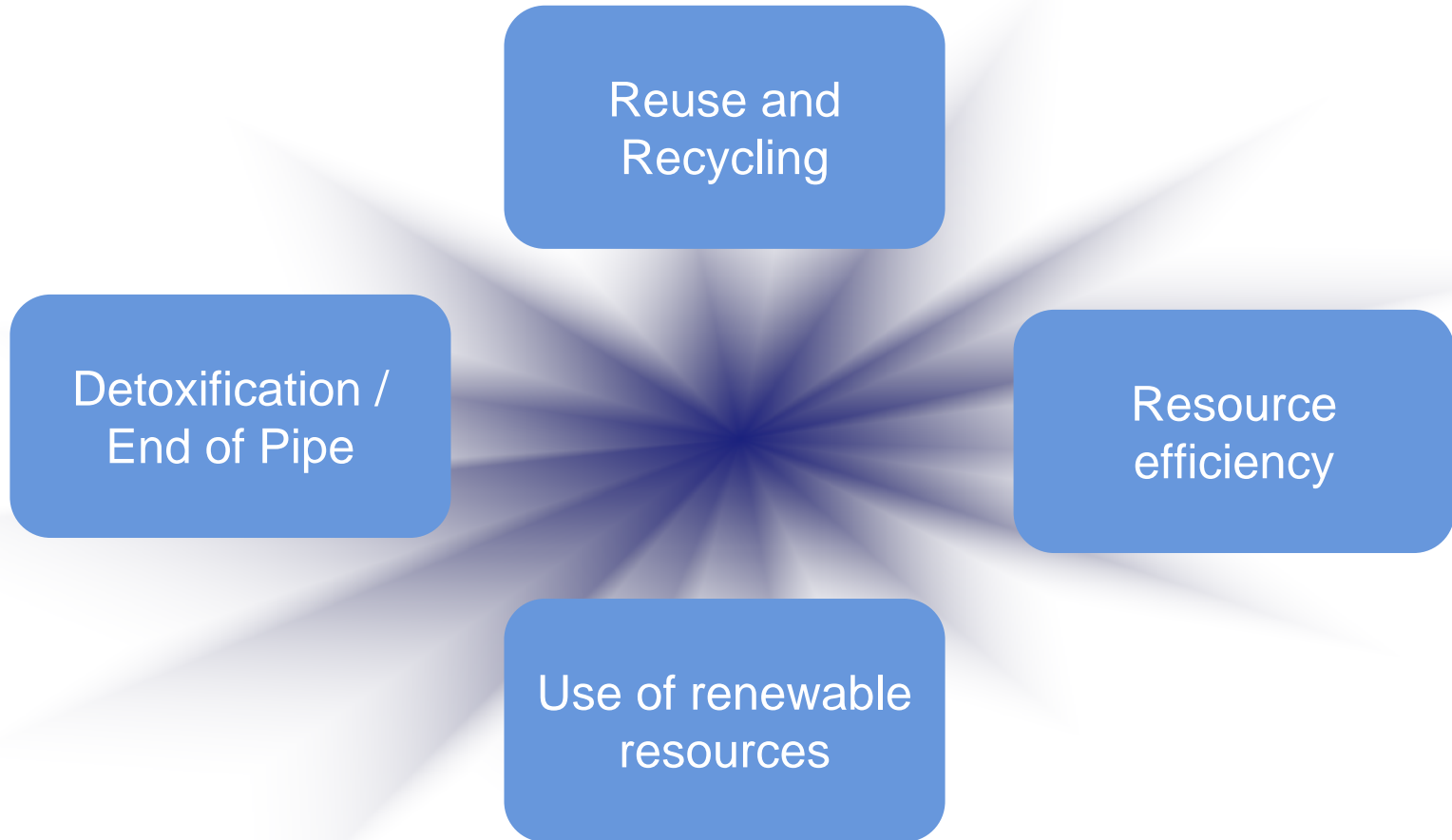
## Resources in the production-consumption system

### Production-Consumption System



# The decoupling challenge

## Resource efficiency and other policy approaches



Source: Adapted from Wuppertal Institute

# The decoupling challenge

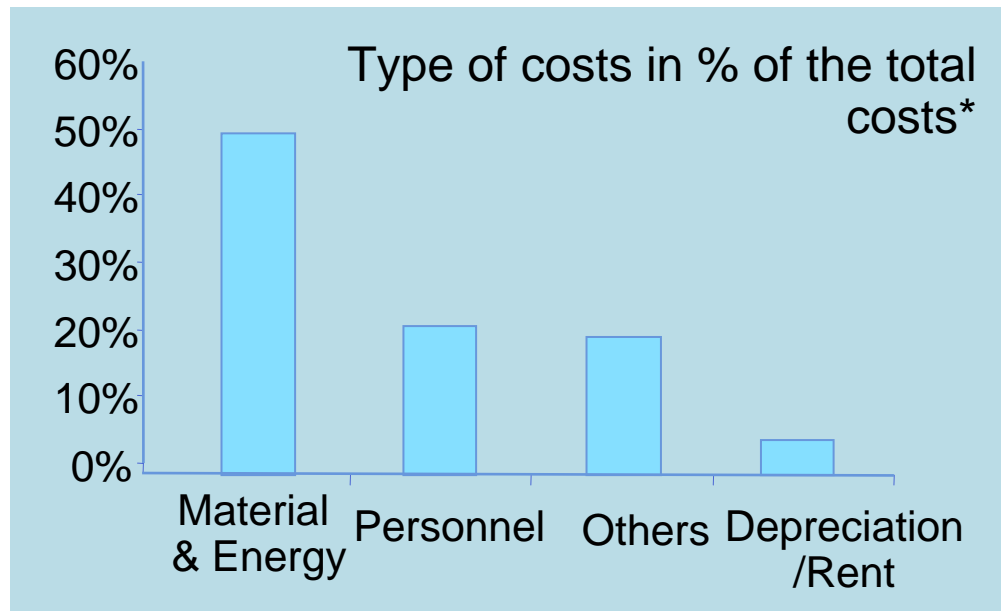
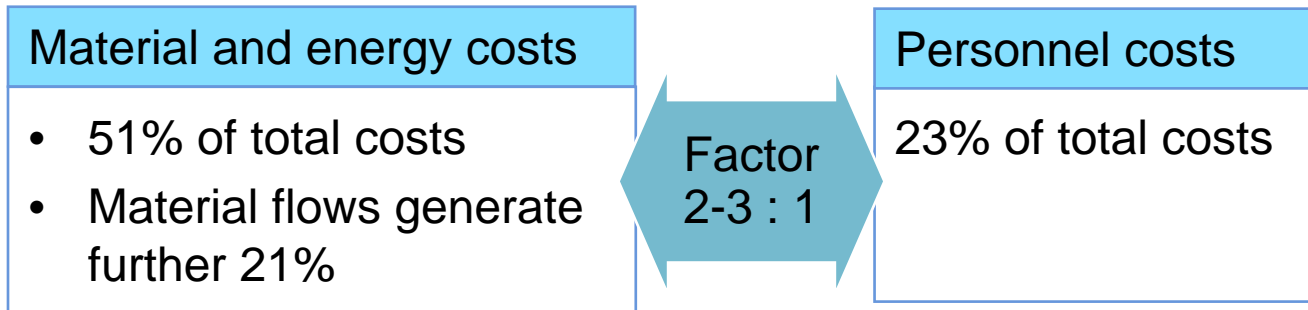
## Resource efficiency – the way forward

	Detoxification / End of Pipe	Reuse and Recycling	Use of renewable resources	Raising resource efficiency
Reduce environmental impacts	+++	+	+	++
Sustaining the structure of production-consumption systems	–	+++	+++	+/-
Adjust throughput of production-consumption system	–	+	–	+++
Limit expansion of infrastructure	–	–	–	++
Socio-economic benefits (competitiveness, poverty reduction)	(-) +	++	+(+)	++(+)
Minimise problem shifting	--	+	+/-	++

Source: Adapted from Wuppertal Institute

# Resource efficiency – the way forward

## Vast cost reduction opportunities in the private sector...



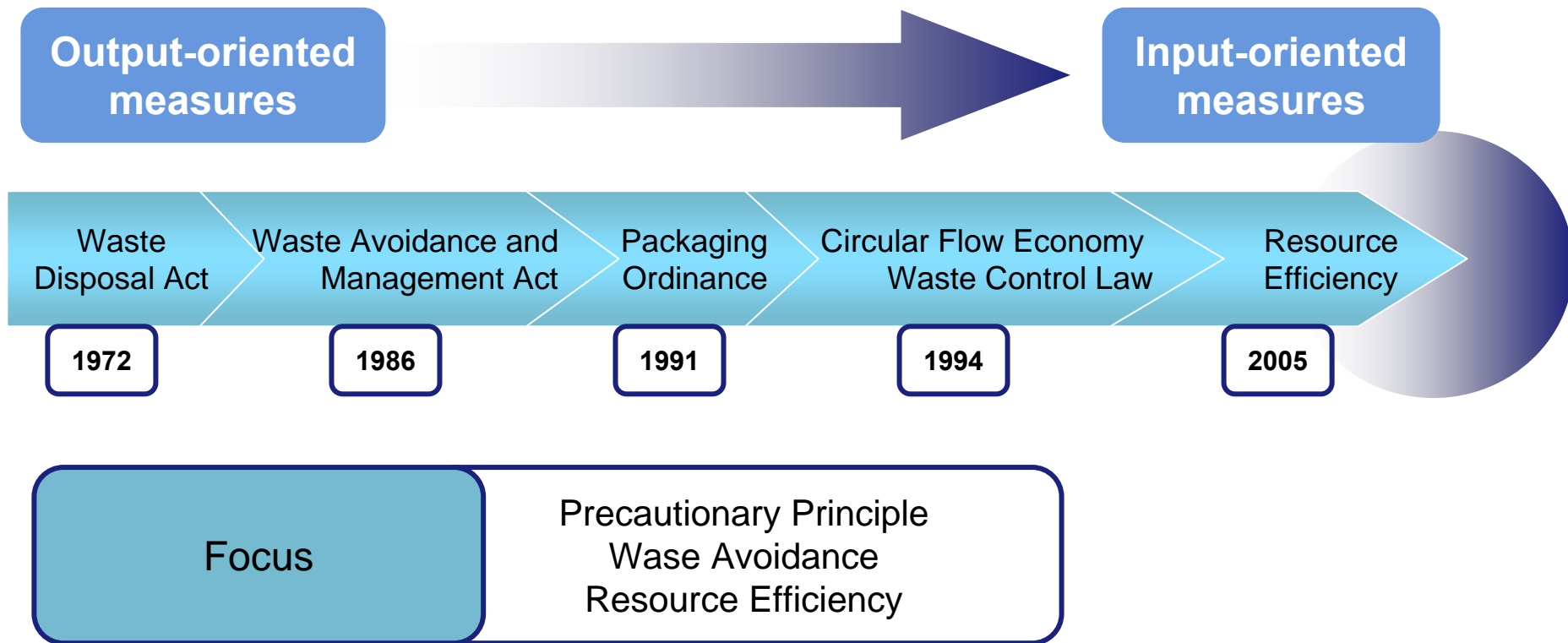
\* Federal Statistical Office, Cost Structure of Manufacturing Industries, 1999

Quelle: ADL, Dr. Hartmut Fischer, 2003

# The decoupling challenge

## Case Study: Circular Economy Law, Germany (3)

### Recent focus in German CE Policy

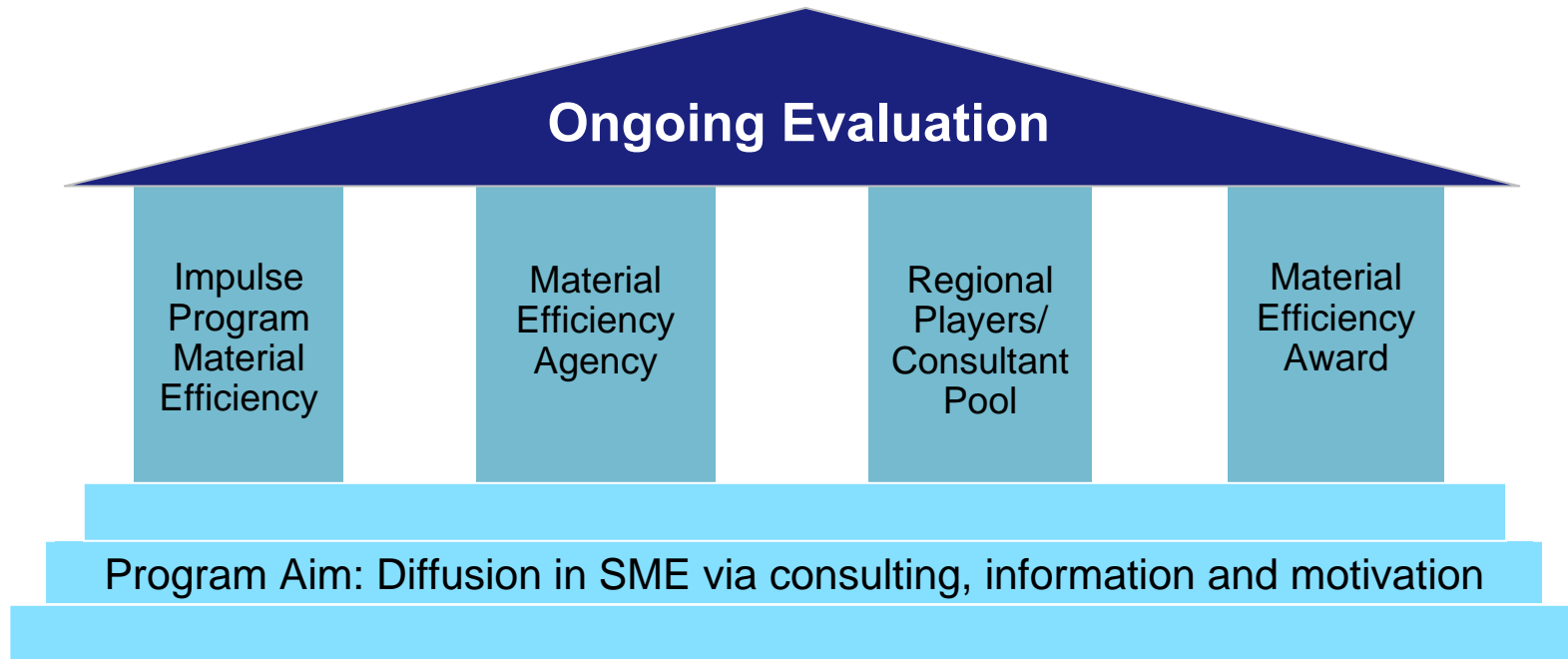


# The decoupling challenge

## Concept for the German Material Efficiency Program

### German Material Efficiency Program for the Ministry of Economics and Labour

Policy Recommendations for  
designing and implementing  
a Material Efficiency Program



# Policy reinforcement for Circular Economy

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Structural Change: The case  
of Germany

---

Recent trends: The case of  
China/Asia

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The decoupling challenge:  
Opportunities through  
resource efficiency

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Circular Economy in  
China: Opportunities for  
decoupling

Circular Economy in China:  
Opportunities for decoupling

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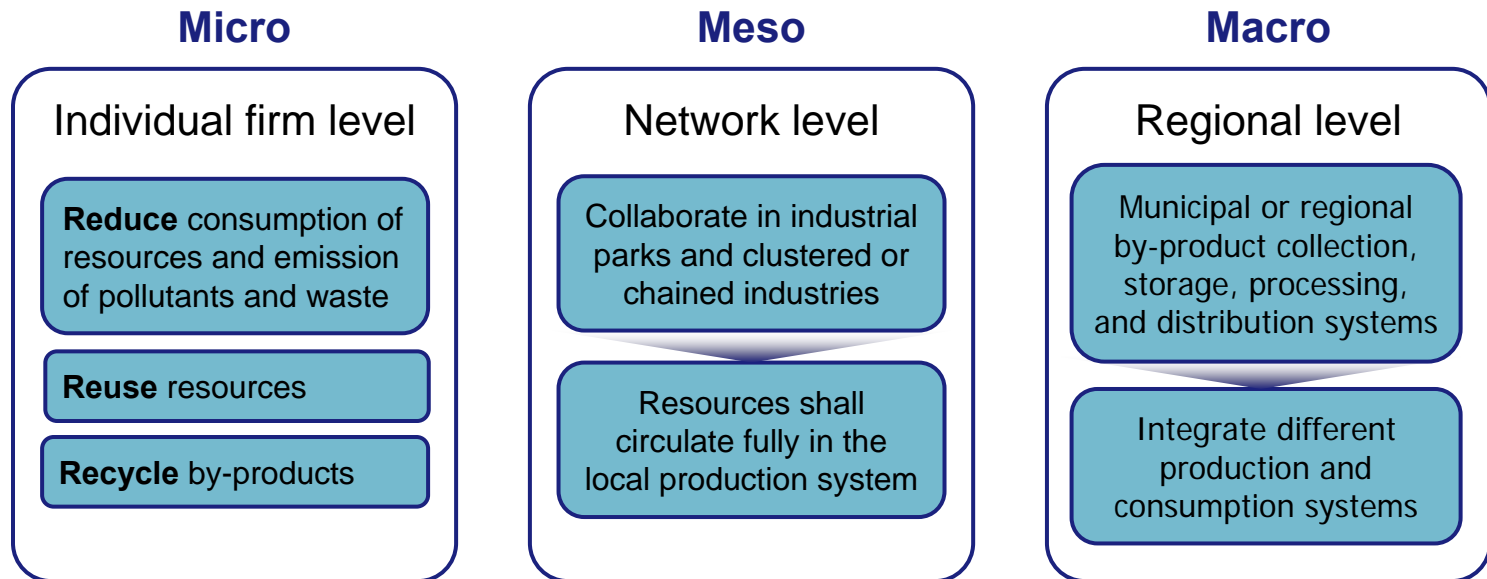


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# Circular Economy in China

## Challenges and opportunities for decoupling

# Circular Economy in China



**Final Goal:**

„all-round well-being society“

### Circular Economy' in China

Input  $\longleftrightarrow$  Output

**3R-Principle: Reduce – Reuse – Recycle**

Strong focus world-wide & also in China

Becomes increasingly important in the future

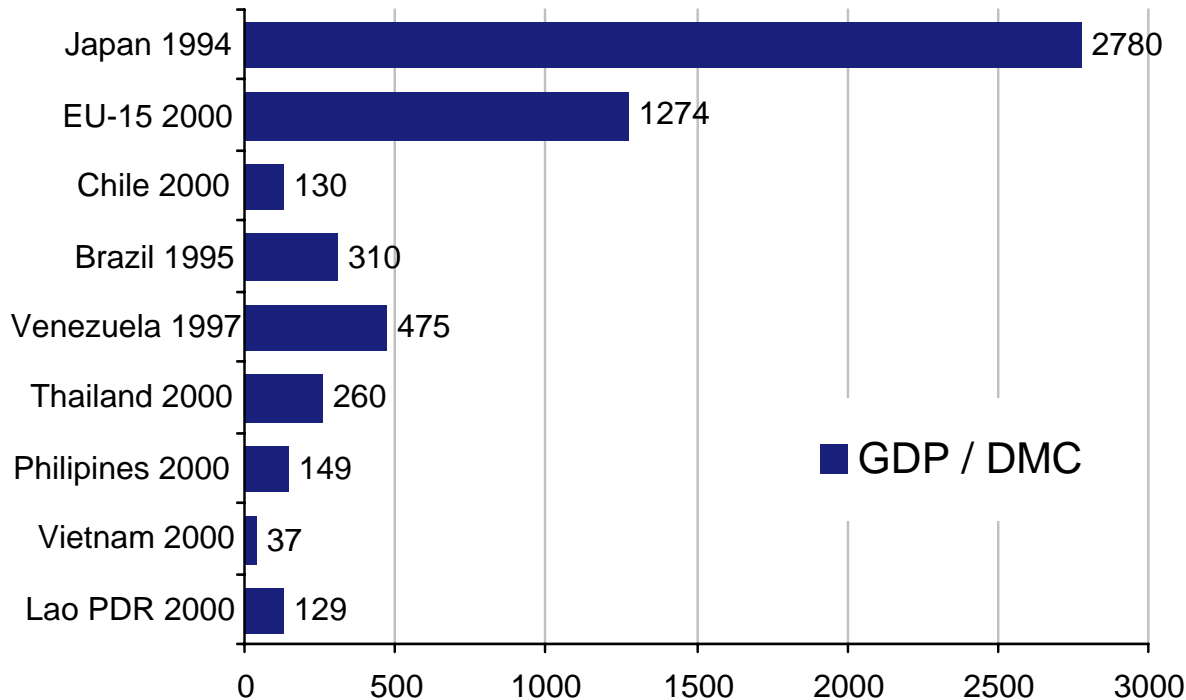
**Resource-Efficiency & Dematerialisation**

## Presentation by SEPA

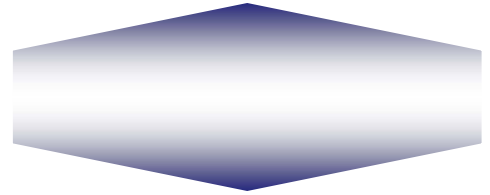
# Circular Economy in China

## Resource efficiency – the way forward

### Large efficiency gap



Between developed and developing countries



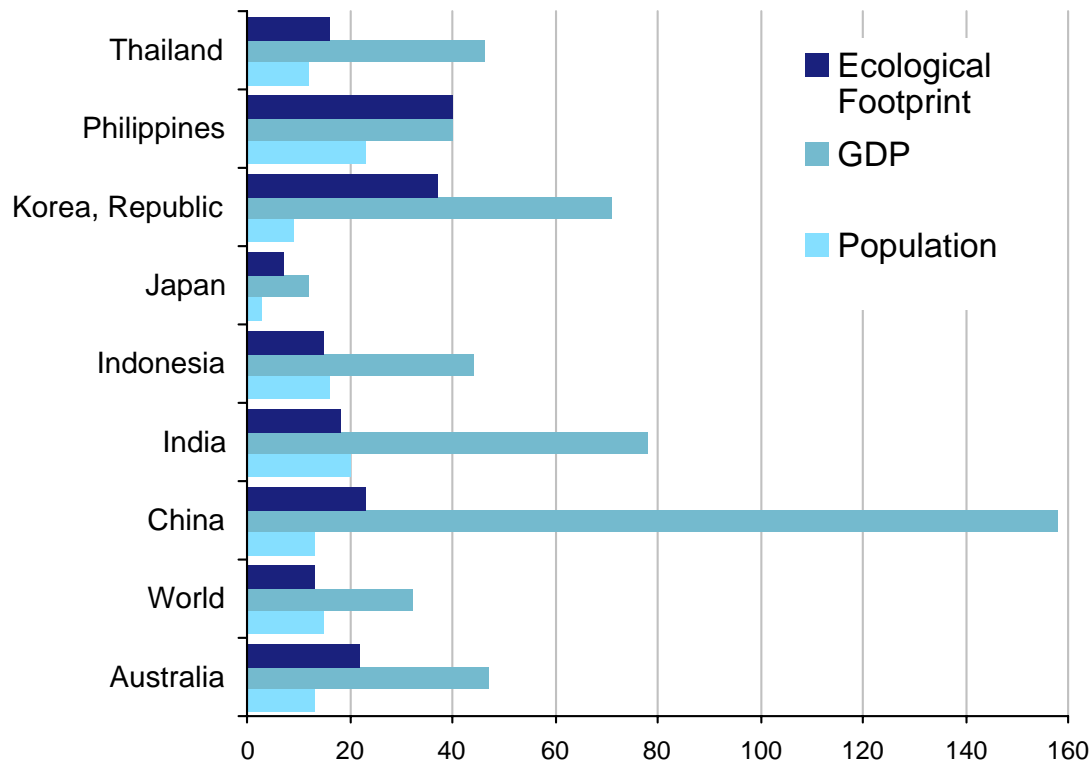
Between developing countries

Quelle: Eisenmenger und Schandl 2003

# Circular Economy in China

## Resource efficiency – the way forward

### Growth 1991-2001



Data from WWF 2005

Ecological footprints grow slower than GDP

„Decoupling“ of growth and resource use in Asia?

Resource efficiency for competitiveness?

# Circular Economy in China

## Opportunities to leapfrog towards resource efficiency



# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**





# Think2

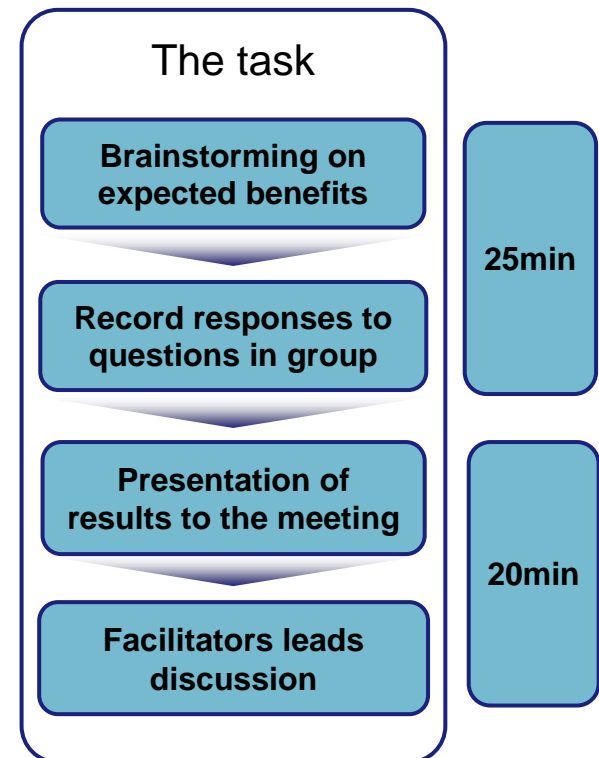
Group discussions: Expected benefits from implementing Circular Economy

# Group discussions

## Benefits for your region

**What environmental, economic and social benefits do you expect from implementing Circular Economy in your region?**

What do we do?



# Group Discussion

Think2

Please brainstorm...

**What environmental, economic and social benefits do you expect from implementing Circular Economy in your region?**

**Environmental:**

**Economic:**

**Social:**

Write answers to  
each question

25  
Minutes

Report to  
group

# Think3

Opportunities: Circular Economy and SCP in China & Key results from the Guiyang policy framework study

# Policy reinforcement for Circular Economy

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Current status of Circular  
Economy in China

Current status of Circular  
Economy in China

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Main results of the policy  
framework study

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# Presentation by SEPA

# Policy reinforcement for Circular Economy

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Main results of the policy  
framework study

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Current status of Circular  
Economy in China

---

Main results of the policy  
framework study

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# Importance of CE for Guiyang

High awareness on Circular Economy concept among governmental officials

In the interviews, local decision makers stated...

“CE offers opportunity to align economic growth with environmental protection”

“Guiyang is very committed to a long-term CE strategy”

“Guiyang has recently reinforced its commitment to CE”

“More instruments needed to implement CE at city level”



# Awareness & understanding

### Current state

High awareness on Circular Economy concept among governmental officials

Understanding on CE is closely related to the 3R-Principles (Reduce, Reuse, Recycle)

### Resulting opportunities

Raising public awareness on CE and communicating the role of consumers in applying CE at household level

Focus lies on Reuse & Recycle, hence, opportunities to raise awareness on benefits of resource efficiency

# Survey findings

## Awareness and understanding on Circular Economy II

### Current state

Focus on solid waste management in urban areas

Circular Economy is closely related to the establishment of Eco-Industrial Parks

Understanding of the interrelationship of environmental protection and the quality of human life

### Resulting opportunities

Opportunities exist for increasingly enhance and promote knowledge on life-cycle-thinking

Knowledge-building on the integration of production and consumption systems on a regional basis

Further exploring the mutually reinforcing linkages between environmental services and poverty alleviation

# Survey findings

## Awareness and understanding on Circular Economy



### Current focus

State-owned enterprises in selected heavy polluting industries

Include private sector enterprises, especially SMEs

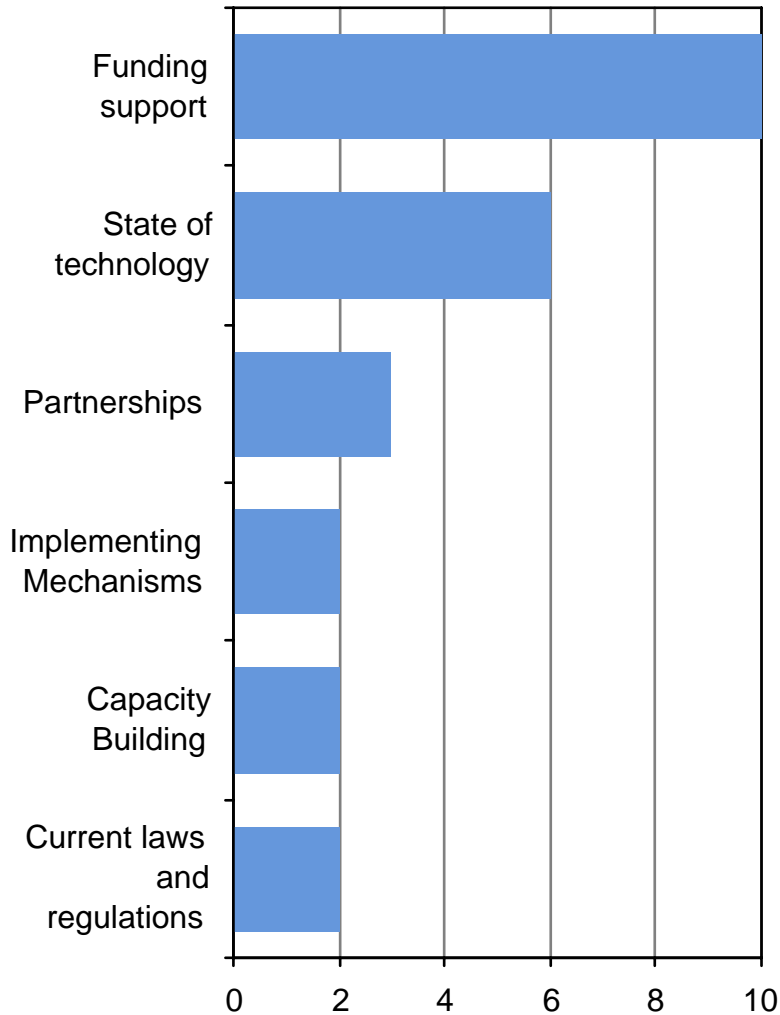
Address full life cycle of products and services

Address consumption behaviour

Develop new, less-polluting industries

# Survey findings

## Barriers towards implementing Circular Economy



## Main Barriers for implementing CE

Funding emerges as most important barrier

State and development of technology as another key areas of concern

Partnerships as third-priority issue

# Policy instruments implemented

### Already strong application

Laws and regulations (legislative measures)

Cleaner Production (auditing and implementation)

Economic instruments

Development of master plans

Environmental management systems

### Improvement opportunities

Economic instruments

Educational and research tools

Informational tools

Cooperational tools

Indicators

Labelling

Life-cycle assessment

Public procurement

Sustainable consumption

**Policy mix:** Understand linkages and dependencies between policy instruments

# Stakeholder involvement

### Strong interaction

Governmental departments (11)

State owned enterprises (8)

Private sector (7)

### Weak interaction

Foreign NGOs (4) / NGOs (3)

International organisations (3)

Public (3)

Foreign Enterprises (3)

Foreign governmental institutions (3)

Extend outreach of  
governmental activities  
to wider society

Build stronger  
international linkages  
to implement projects

Increase societal support  
for implementation of  
policy instruments

# Opportunities arising

# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Think3

Individual Brainstorming: Addressing the key results from the policy framework study

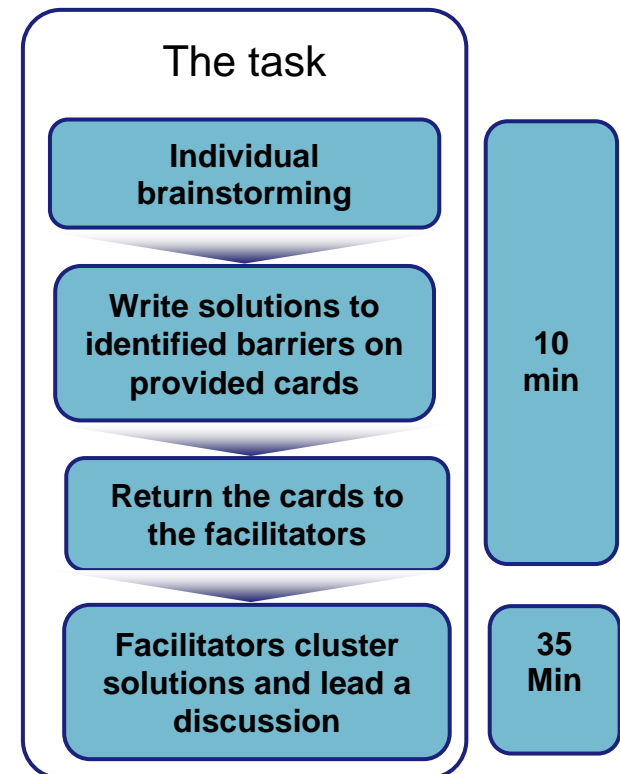


# Individual Brainstorming

## Opportunities for China

1. Consider the main barriers identified in Policy Framework Study
2. Write down possible solutions to overcome the barriers on cards
3. Identified solutions will be clustered on clip chart

### What do we do?



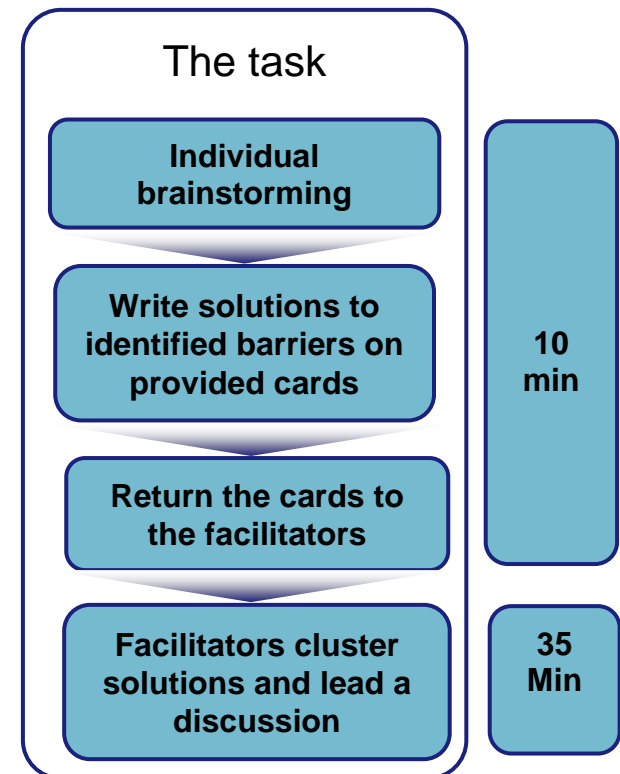
# Individual Brainstorming

## Opportunities for China

### Identified barriers:

1. Insufficient funding, need to review approaches elsewhere
2. Need for technical & management/organizational system innovation
3. Knowledge & guidelines on CE planning procedures and difference from traditional environmental management
4. Need for legislative support for CE and market-based approaches

### What do we do?



# Think4

Opportunities for advancing sustainable consumption and production in China

# Barriers to realising SCP projects

Lessons learned from Guiyang and beyond...

Finance needed to enable investments in transition period

Lack of access to appropriate technologies / ability to developed these

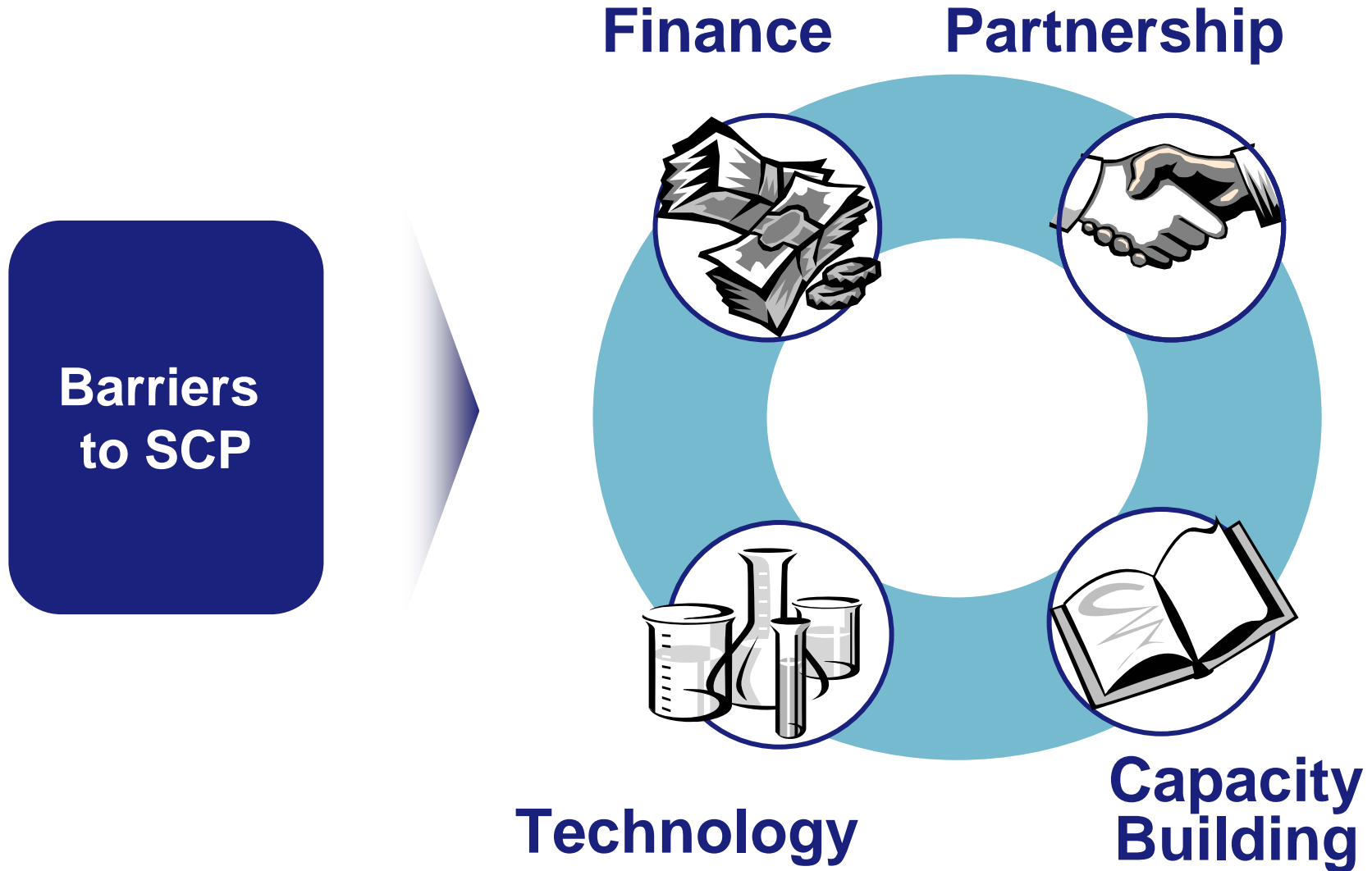
Single actors unable to move due to internal and external constraints

Both public and private actors lack awareness and knowledge on SCP

**Barriers to SCP**

# Opportunities enabling SCP

4 major means to break barriers to implementing SCP policies



# Policy reinforcement for Circular Economy

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Funding and financing

---

Funding and financing

---

Technology transfer and  
development

---

Engagement and  
Partnership

---

Awareness raising and  
capacity building

---



# Funding and financing

Finance needed to enable investments in transition period

## Mix public and private funding

Public seed funding to initiate continuous investments

Private sector investment to capitalise on investment capacities

Use environmental funds to coordinate funding

Try to maximise environmental, social and economic side-effects

Environmental taxes and charges

Co-financing

Development grants

NGO and foundation funding

Micro-finance

Carbon financing

Private investment

# Clean Development Mechanism

### Mechanism

Allows industrialised countries with a greenhouse gas reduction commitment to invest in emission reducing projects in developing countries (e.g. China) as an alternative to more costly emission reduction projects in their own countries

### Possible projects

Fuel Switching, Efficiency, Gas capture/destruction from landfills, Renewables, Transport, Small/large hydro, sinks for GHGs

### How it works

Identify local GHG abatement project and find investment partner from industrialised country

Make the case using CDM Executive Board (EB) approved methodologies

Approval by third-party agency

After final approval by CDM EB, Certified Emission Reductions (CER) are awarded

### Current State - July 2006

Currently 240 projects  
70 million CERs issued  
~36% for China



# Equator Principles

A benchmark for the financial industry to manage social and environmental issues in project financing

41 Banks worldwide have adopted the Equator Principles, covering about 80% of project financing worldwide (June 2006)

Equator Principles Financial Institutions (EPFIs) will only provide loans to projects (>10 million US\$) that conform to the Equator Principles

## Categorisation

**Category A:** High risk, Projects with potential significant social and environmental impacts

**Category B:** Limited risk, Projects with limited social and environmental impacts, largely reversible

**Category C:** Very low risk, Projects with minimal or no social or environmental impacts

## Equator Principles

Review and Categorisation

Social and Environmental Assessment

Applicable Social and Environmental Standards

Action Plan and Management System

Consultation and Disclosure

Grievance Mechanism

Independent Review

Covenants

Independent Reporting and Monitoring

EPFI Reporting

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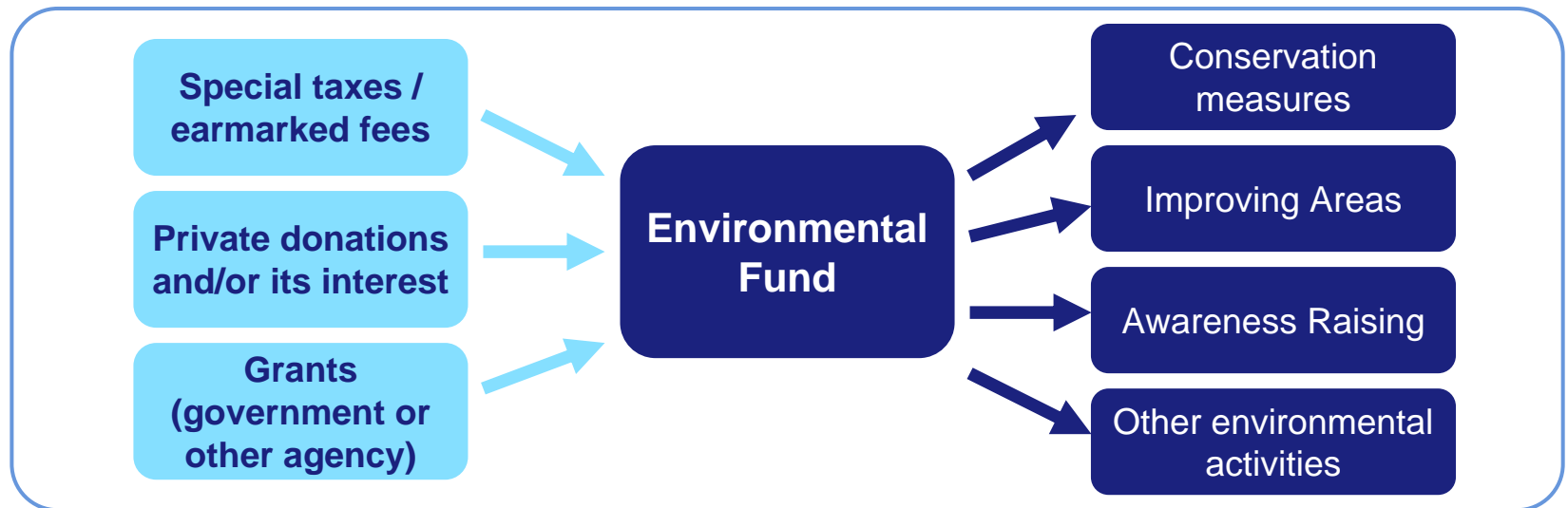
# Environmental Funds

## Long-term finance mechanism

### What are they?

Environmental Funds are innovative mechanisms for long-term finance initiatives.

### How do they work?



# ProKlima

## Impulses for the Hannover region

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Decompressor benötigt (nicht installiert).

### Climate Protection Fund in Hannover, Germany and its region

#### Sources of funding

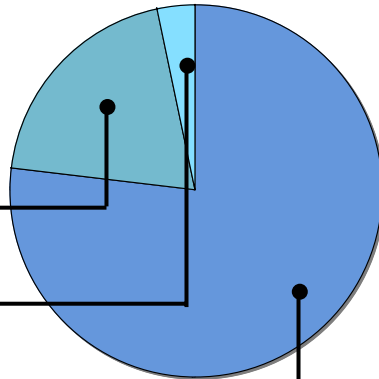
Total of about  
5 Million EUR/year

City of Hannover

Cities around Hannover

Municipal utility of Hannover

- Earmarked fees from gas usage (50%)
- A set percentage of annual profits (50%)



#### Support Programmes

Energy modernisation of older buildings

Heat energy conservation

Solar water heating systems

Solar energy and climate protection in schools and public institutions

Energy modernisation of club houses/buildings

# Policy reinforcement for Circular Economy

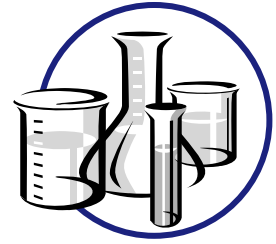
Technology transfer and  
development

Funding and financing

Technology transfer and  
development

Engagement and  
Partnership

Awareness raising and  
capacity building



# Technology transfer & development

Lack of access to appropriate technologies / ability to developed these

## Technology transfer

Introducing technology already applied in other circumstances

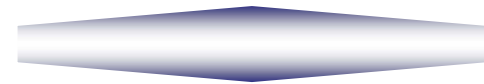


## Local technology development

Developing technology based on local knowledge and resources

## Technology assessment

Assess environmental, social and economic impacts of technology



## Technology promotion

Make sure that environmental technology gets applied by business

# Effizienz-Agentur NRW

## Cleaner Production in North Rhine-Westphalia

### EFA Toolbox

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Material Flow Analysis

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Eco-Efficiency Check

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Optimisation of Product  
Development

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Finding potential for cost  
cutting in resource use

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Financing PIUS  
Implementation

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Effizienz-Agentur NRW

Helping small and medium sized manufacturing enterprises achieve an increase in cost efficiency, protect the environment and gain a competitive edge in the market

### Facts

- From 1998 until 2005, 132 Projects on Production Integrated Environmental Management have been completed
- Effect: 5,3 Million EUR of savings in production processes each year

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# IHOBE Regional support initiative for clean technology

## Basque List of Clean Technologies

A list of environmental technologies that generate meaningful environmental improvements within the areas of water, air, waste, resources and/or soil.

Database, information on clean technology and awareness raising

Up to 30% tax deduction to promote usage of technologies by business

# Policy reinforcement for Circular Economy

Funding and financing

Technology transfer and  
development

Engagement and Partnership

Engagement and  
Partnership

Awareness raising and  
capacity building



# Engagement and Partnership

## An overview



# Engagement & Partnership

Single actors unable to move due to internal and external constraints

International agencies

Governmental departments

Donor organisations

Universities & Research Institutions

Local businesses

Multinationals operating in and sourcing from region

State-owned companies

NGOs local, national, foreign...

Business associations

Pool resources and capabilities of different partners to make SCP projects happen

Pool demand and create markets for SCP products and services

Exchange knowledge and information for policy and project implementation

# Espaço ECO Foundation

Latin America's "first centre for applied eco-efficiency"

Supports environmentally and economically efficient production in Latin America



Eco-Efficiency training centre for entrepreneurs  
and multipliers

Disseminate knowledge on existing projects

Develop new and innovative solutions

**joint project**

**BASF**

The Chemical Company

German chemical company  
active in the Brazilian market

**gtz**

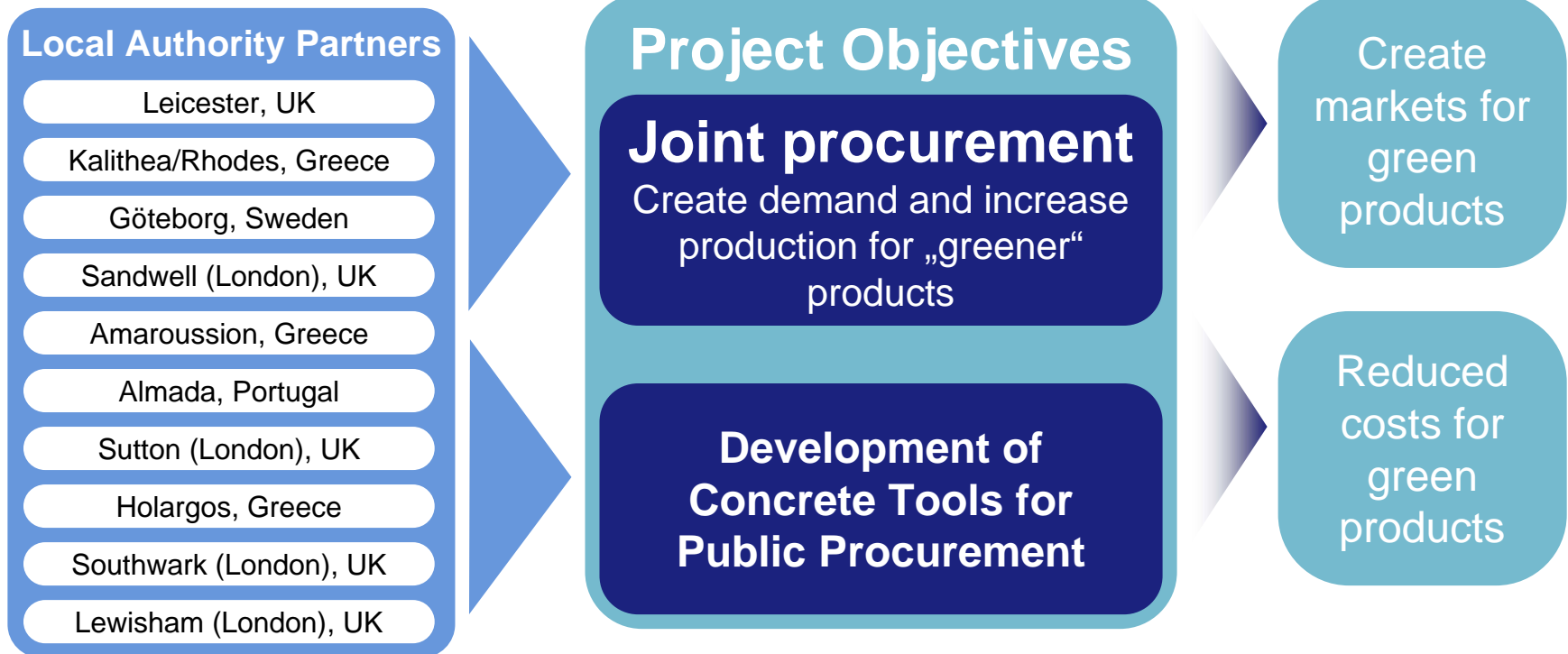
German development and  
technical cooperation agency

# Engagement and Partnership

## Case Study: LEAP (Local Authority EMAS and Procurement), UK

# LEAP

## Local Environmental Management Systems and Procurement



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# FairTrade/Organic in Germany

### Germany's big discount stores

Sales of organic products  
(change from 2004 to 2005)

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**+62%**

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**+46%**

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**+62%**

### FairTrade Sales increase in 2005

Product	Incr.	Organic
Coffee	+ 10%	50%
Juice	+ 12%	8%
Candy	+ 14%	
Cocoa	+ 10%	79%
Honey	+ 8%	13%
Chocol.	+ 22%	60%
Tea	+ 0%	71%
Fruits(South)	+120%	99%

64% of FairTrade products in Germany are also organic

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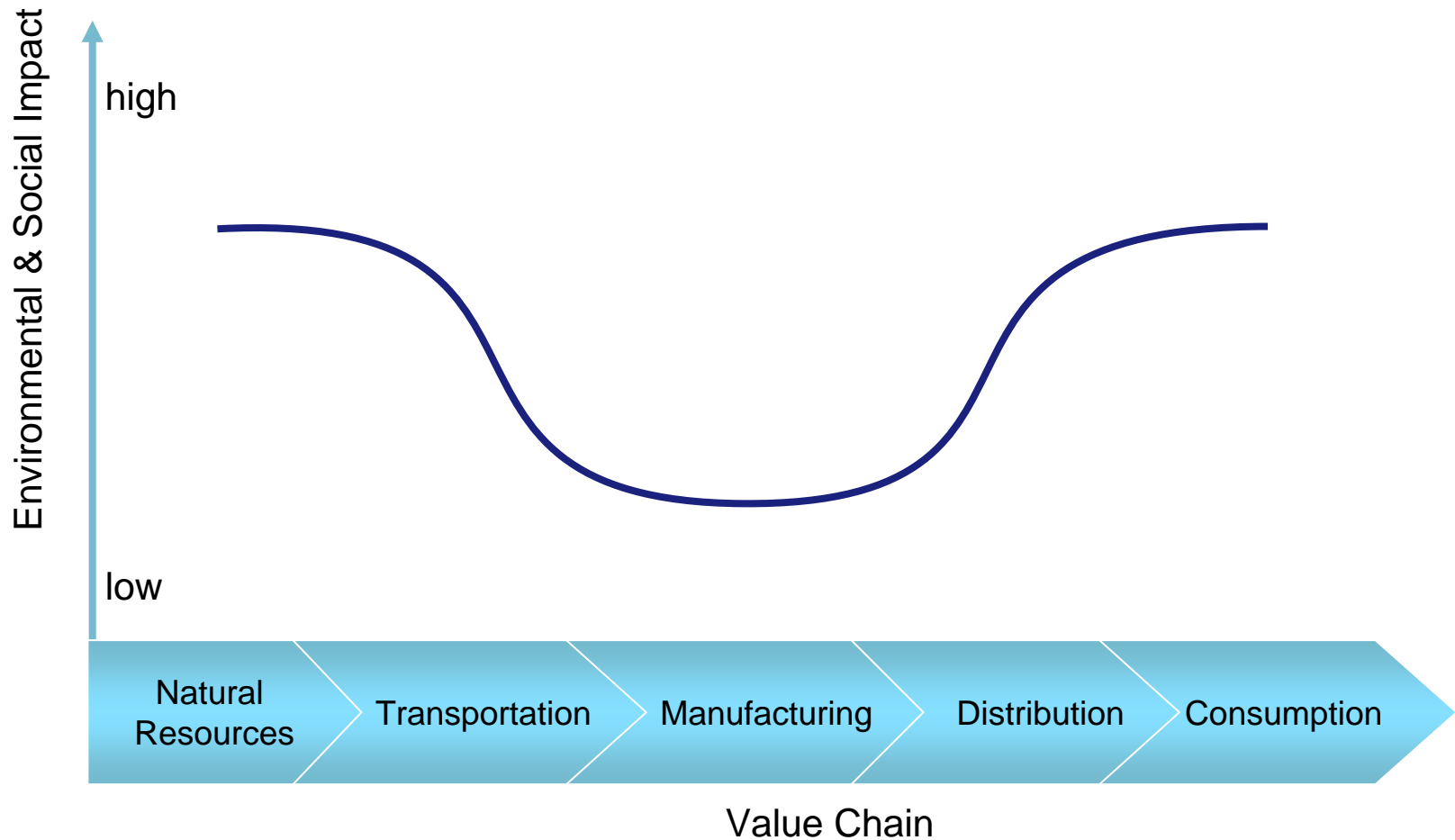
German Organic Label  
(EU Standards)

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# Engagement and Partnership

## Untapped opportunities for partnerships along value chains

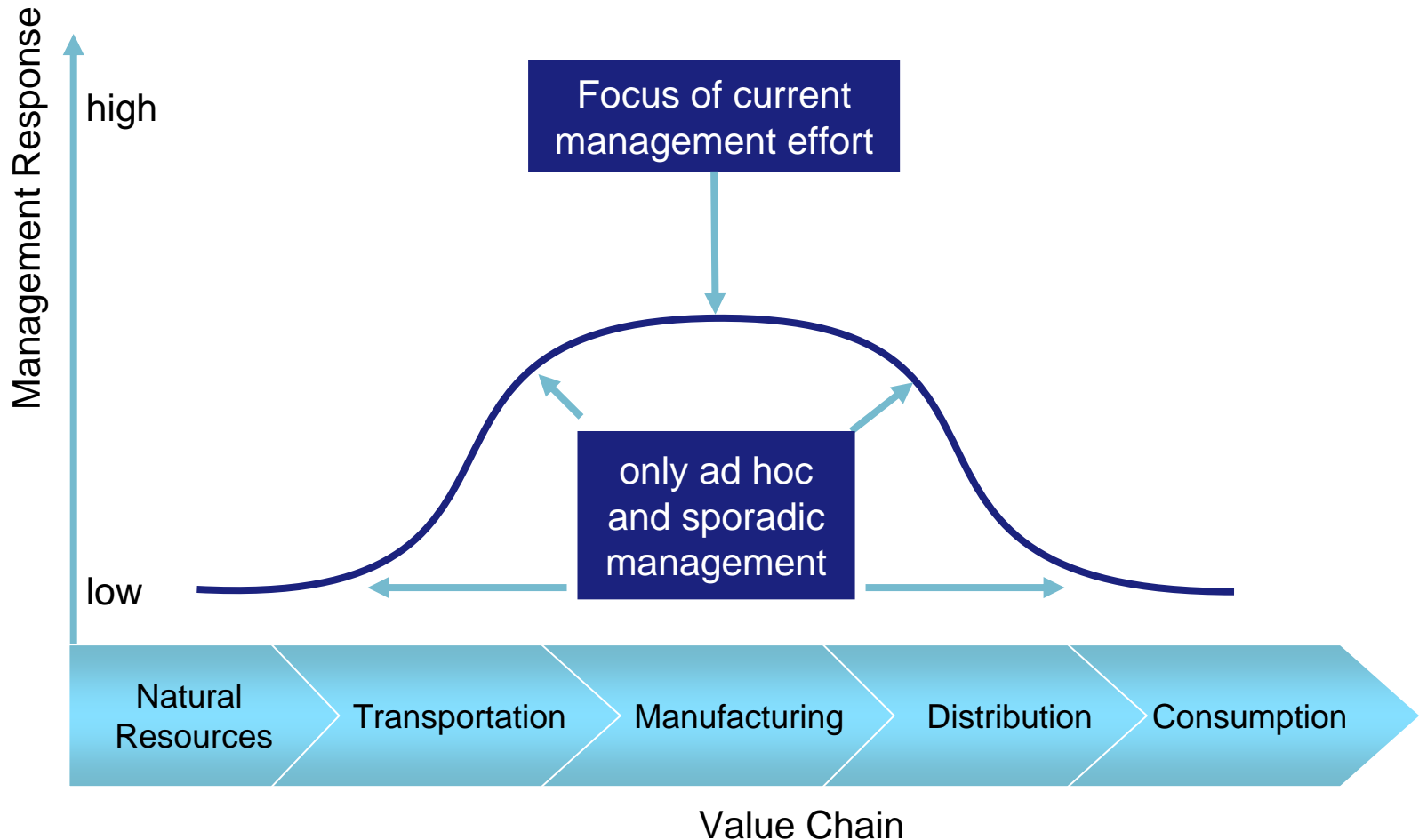
### Impacts and Opportunities among consumer products



# Engagement and Partnership

## Untapped opportunities for partnerships along value chains

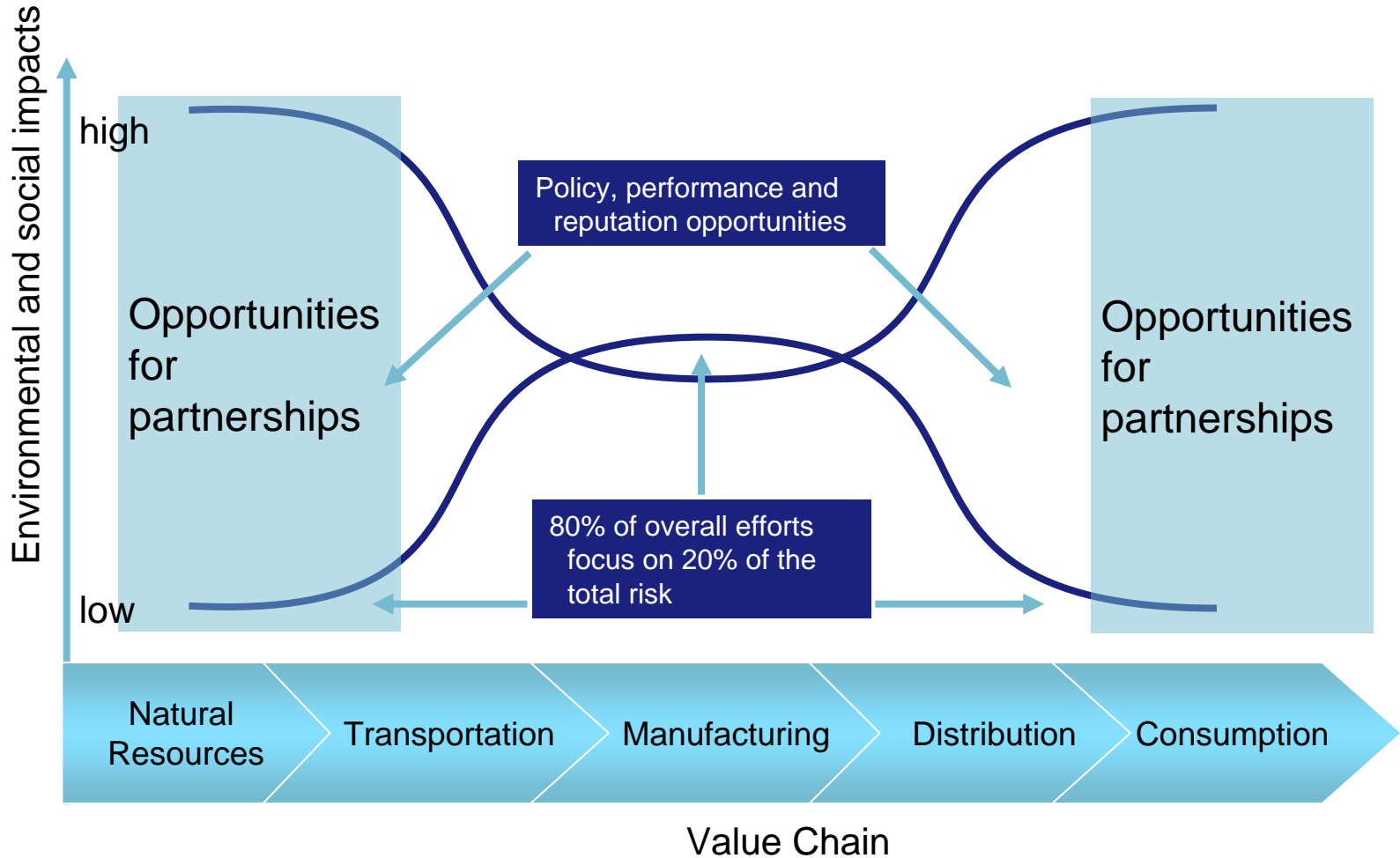
### Current Management and Policy Effort



# Engagement and Partnership

## Untapped opportunities for partnerships along value chains

### Mismatch between the two



# Policy reinforcement for Circular Economy

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Funding and financing

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Technology transfer and  
development

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Engagement and  
Partnership

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Awareness raising and  
capacity building

Awareness raising and  
capacity building

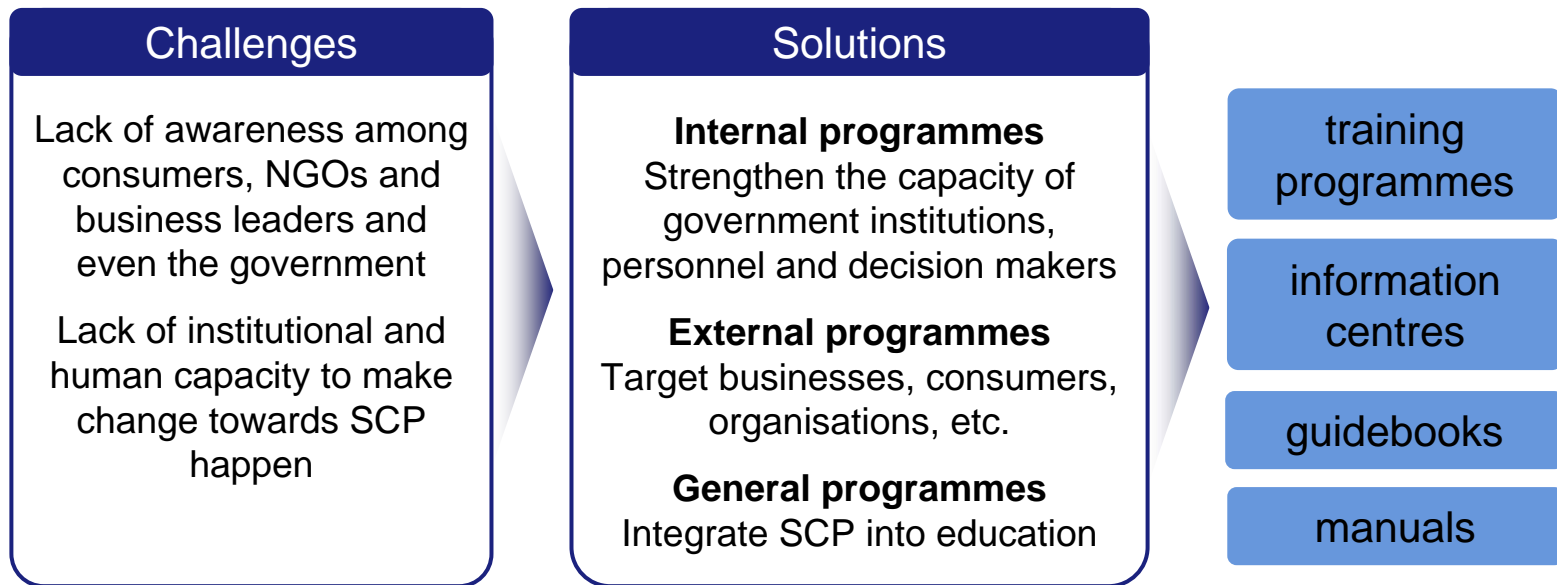
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# Awareness raising & capacity building

Both public and private actors lack awareness and knowledge on SCP



# Engagement and Partnership

## Case Study: ECOPROFIT in Graz, Austria

# ECOPROFIT

## ECOLOGICAL PROJECT FOR INTEGRATED ENVIRONMENTAL TECHNOLOGY

### Public Private Partnership

Consultants

Local Authority

Business / Companies

### ECOPROFIT Framework

Networking / meetings

Training / Workshops

Addressing current issues

### Workshop Programme

Information and motivation

Cleaner Production

Setting up an environm. team

Material flows analysis

Waste Management / Logistics

Laws and regulations

Efficient energy use

Eco-controlling / Eco-indicators

Preparation of final report

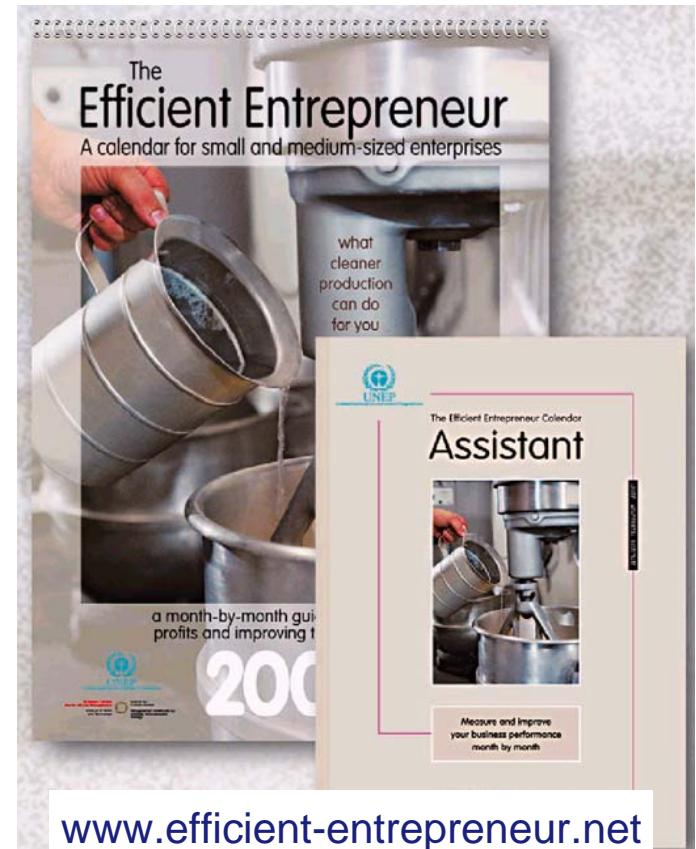
Dubai International Award for Best Practices to Improve the Living Environment 2002

European Sustainability City Award 1996

# The Efficient Entrepreneur

## A calendar for small and medium sized enterprises

- Developed by UNEP and Wuppertal Institute
- Month-by-month guide for achieving lower resource use and higher efficiency
- A different subject each month, e.g. energy (March), water (May), communication (November)
- Includes an Assistant booklet



Wissenschaftszentrum  
Nordrhein-Westfalen

Institut Arbeit  
und Technik



Kulturwissenschaftliches  
Institut

Wuppertal Institut für  
Klima, Umwelt, Energie  
GmbH

# Awareness raising and capacity building

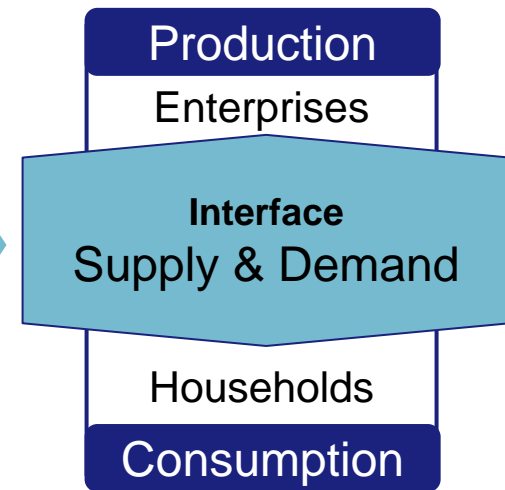
## Capacity building tool – Sustainability

# SMART

Sustainability for the **S**mall and **M**edium Sized Companies committed to **A**ccountability, **R**esponsibility and **T**ransparency



A toolkit enabling SMEs to cope with the sustainable production and consumption challenge



performance optimiser

Month-by-month desk calendar programme

training package

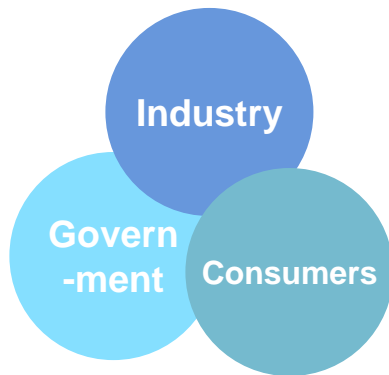
Capacity Building among "information gatekeepers"

reporting resource book

Introduce SMEs to the GRI Guidelines

# One Million Sustainable Homes

To overcome barriers to building sustainable homes, WWF is working on six key strategies



## 6 Key Strategies

Fiscal Incentives

Planning and Building Regulations

Investor Support

Ensuring competitive cost

Build consensus on definition of „sust. homes“

Consumer Awareness

## Housebuilder Sustainability Toolkit

provides clear guidance on for housebuilders seeking to address a wide range of sustainability issues

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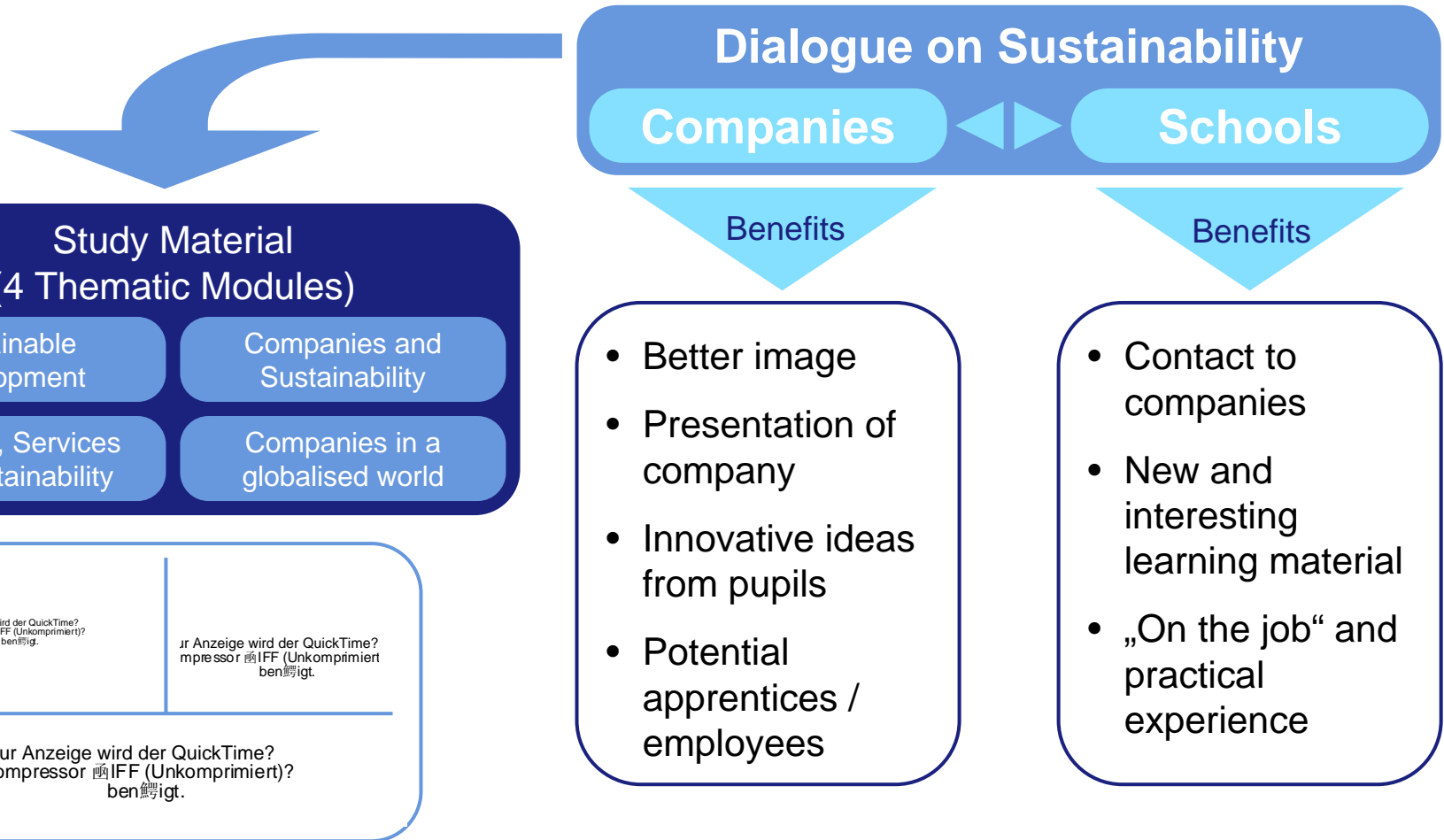
## Fact

More than half of the resources consumed globally are used in construction

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# Kurs 21

## Learning Partnerships for Sustainability



# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Think4

Group exercise: Opportunities for advancing SCP in China

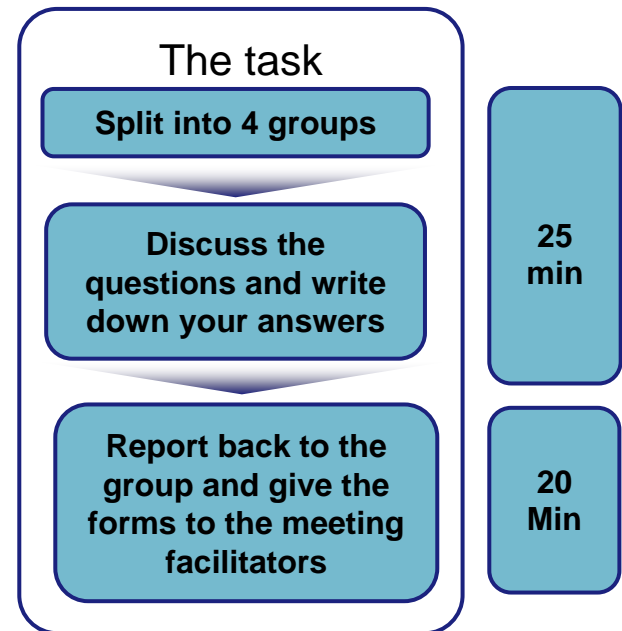


# Group Exercise

## Solution Oriented Opportunities: Resource Efficiency

1. **Four groups with a mix of participants from different departments**
2. **Consider one of the following:**
  - Group #1: Partnerships
  - Group #2: Capacity building
  - Group #3: Finance
  - Group #4: Technology
3. **Write answers on provided sheets**
4. **Report back to meeting**

### What do we do?



# Group Discussion

Think4

## Group 1: Partnerships

*Partnerships can help foster mutual confidence and cooperation that enhance CE and SCP implementation. Examples are local learning networks, knowledge networks in Ecological Industrial Parks (EIP), public-private partnerships and external knowledge partners.*

### 1. Chose an important industrial sector in China.

Sector \_\_\_\_\_

### 2. Who are the key stakeholders that should form a partnership to improve resource efficiency? Why are these stakeholders important?

### 3. What are one or two things each stakeholder should do to make a successful partnership?

Report back in 25  
Minutes



# Group Discussion

Think4

## Group 2: Capacity building

*Capacity Building can provide opportunities and approaches for social innovations. This can include information centres, training programs that promote eco-efficiency, environmental management in enterprises, guidebooks and manuals for employees.*

**1. What are some key knowledge gaps in China that need to be filled to implement the Circular Economy policy?**

**A. Government:**

**B. Industry:**

**C. Consumers:**

**2. What specific actions are needed to address the knowledge gaps about resource efficiency? Please give realistic suggestions.**

Report back in 25  
Minutes



# Group Discussion

Think4

## Group 3: Finance

*Partnerships can provide opportunities for Circular Economy and Sustainable Consumption and Production implementation activities. These can include revenue from economic instruments, Global Environment Facility (GEF) and other multi-lateral donor funding, Clean Development Mechanism (CDM) carbon credits, development cooperation, public-private partnerships.*

- 1. What sources are currently used to fund Circular Economy and Sustainable Consumption and Production activities in China?**
- 2. What projects or initiatives are facing the most critical shortages of funding?**
- 3. What are two things that can be done to increase funding for resource efficiency initiatives?**

Report back in 25  
Minutes



# Group Discussion

Think4

## Group 4: Technology

*Technological development can provide opportunities for enhancing technological innovation. Methods and tools for technological development can include technology transfer, equal access, technology impact assessment, and incentives for environmental and eco-efficient technologies.*

- 1. What are the key issues for technology development that authorities in China are currently working on?**
- 2. What are the highest priority areas for technological innovation to improve resource efficiency? Why are these areas the highest priority areas?**
- 3. What are two suggestions for how technological innovation for resource efficiency can be stimulated in China?**

Report back in 25  
Minutes



# Think5

The SCP policy toolbox: Supporting governments to address opportunities

# Policy reinforcement for Circular Economy

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How governments can  
steer societies towards  
SCP

---

How governments can steer  
societies towards SCP

---

Cooperation needed for  
sound policy making

---

Opportunities for SCP along  
the policy cycle

---

# How governments can steer societies towards SCP

## How can governments influence businesses and consumers ?

“Need for development of policy frameworks that promote the adoption of the SCP by industry and consumers and follow the principles of better regulation”

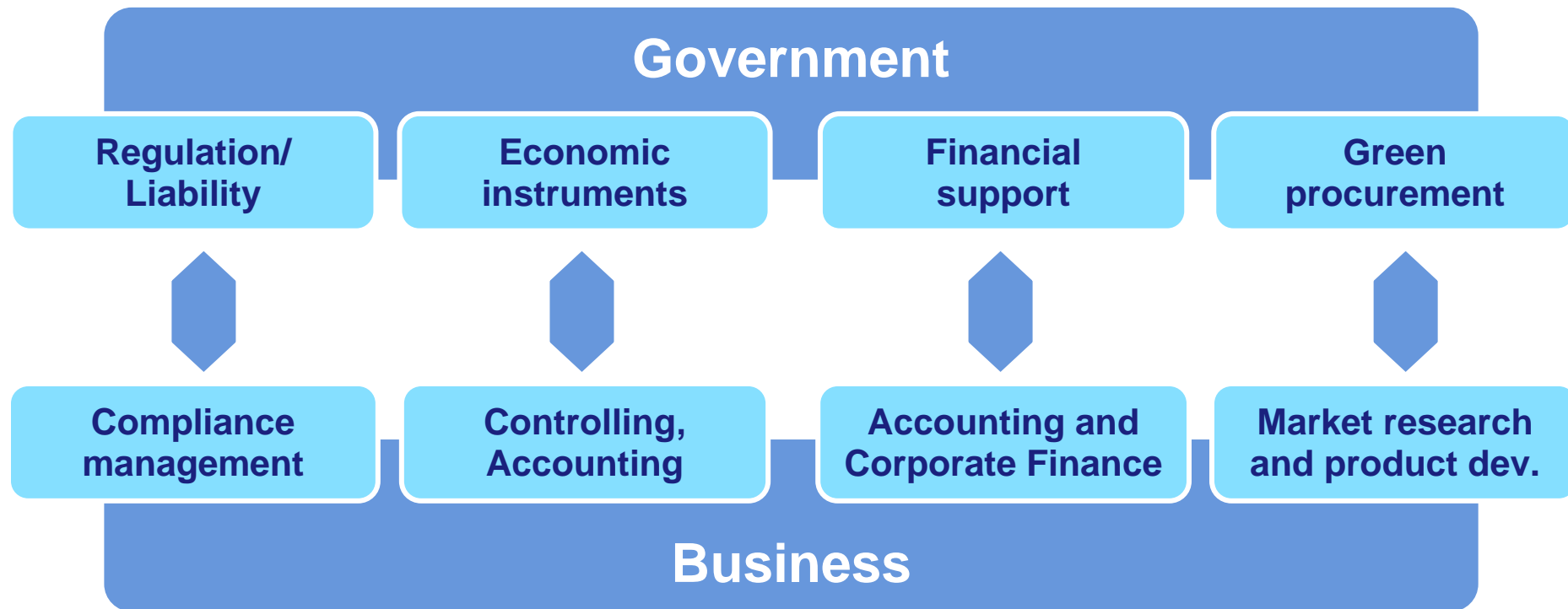


Source: CSCP, UN-DESA, UNEP: Costa Rica background paper, SEPA: China Roundtable on SCP



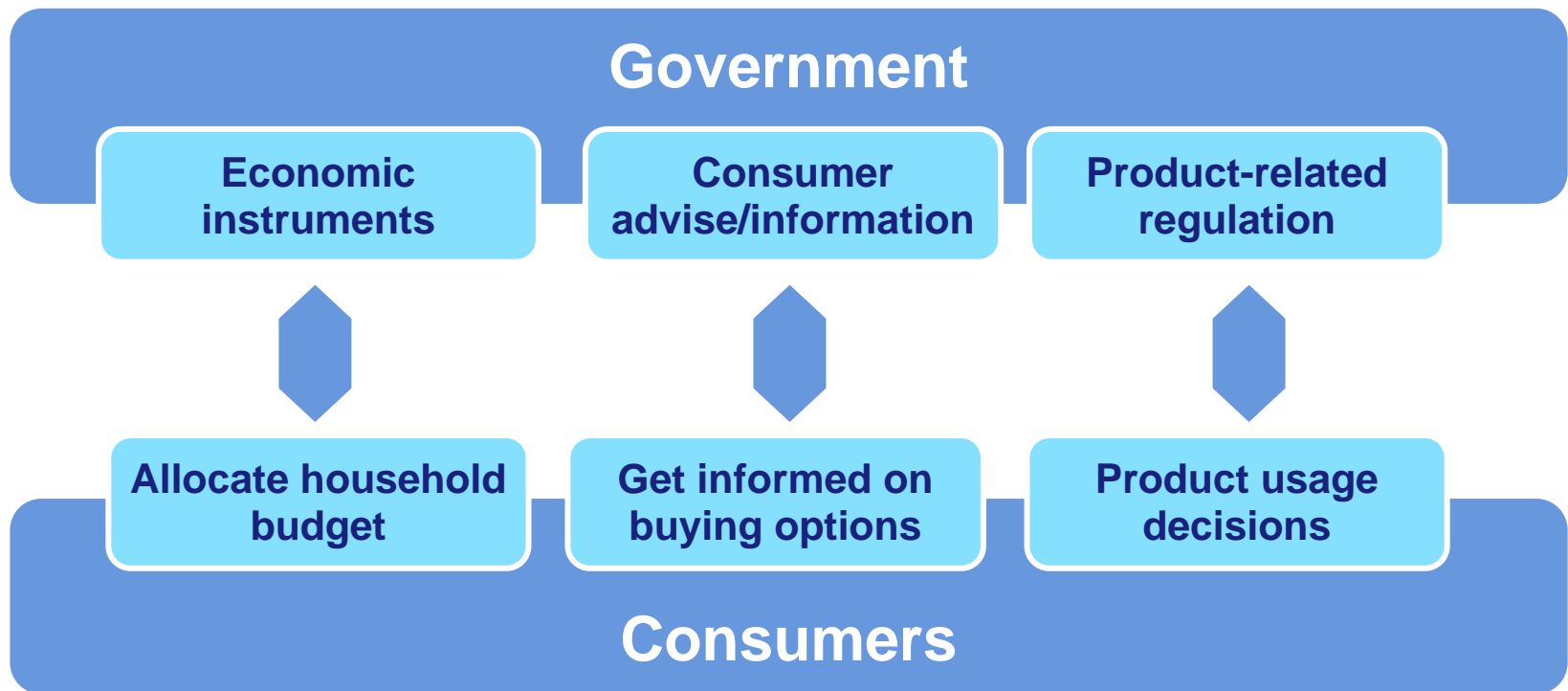
# How governments can steer societies towards SCP

## Interdependencies between governments and businesses



# How governments can steer societies towards SCP

## Interdependencies between governments and consumers



# Policy reinforcement for Circular Economy

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Cooperation needed for  
sound policy making

---

How governments can steer  
societies towards SCP

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Cooperation needed for  
policy sound making

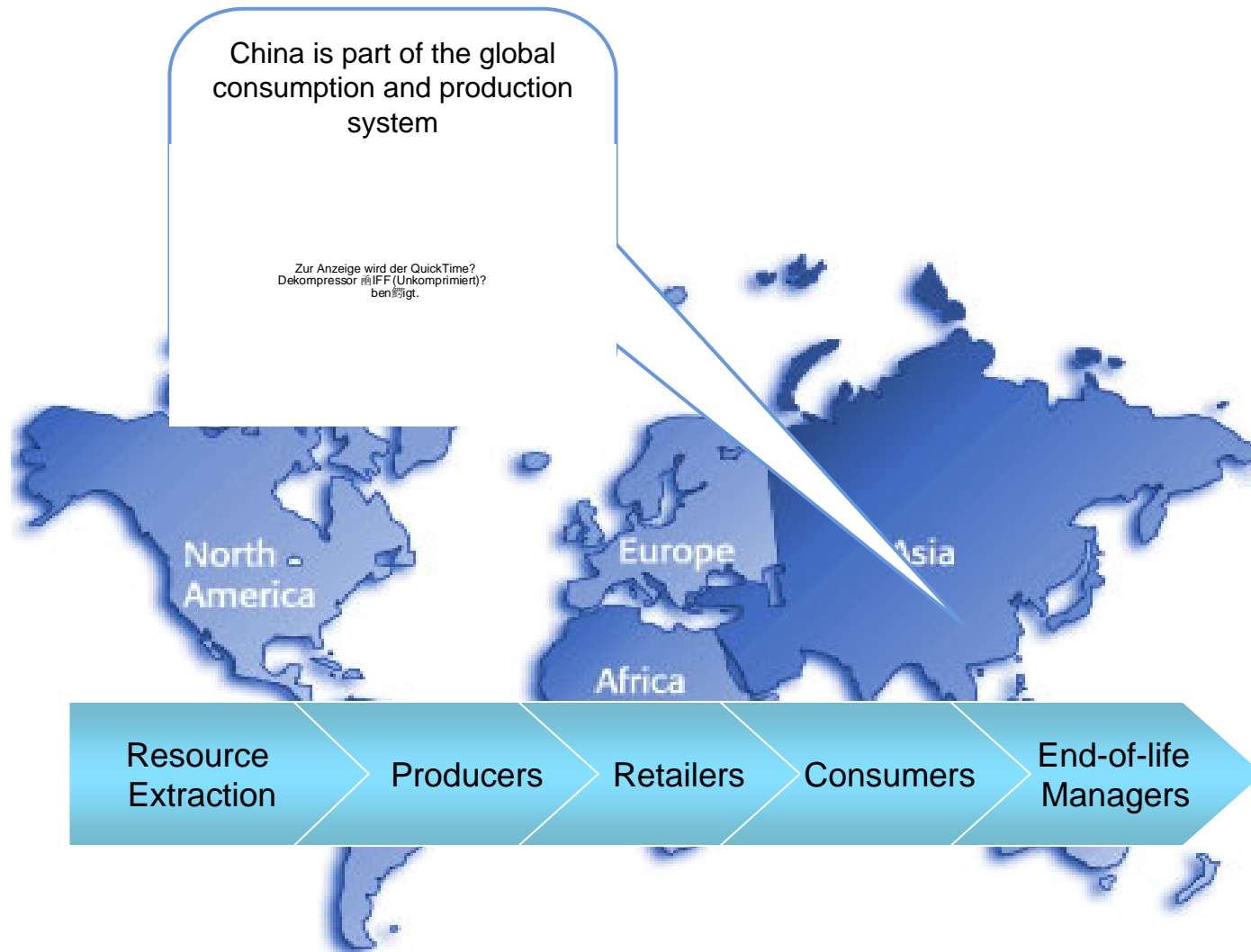
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Opportunities for SCP along  
the policy cycle

---

# Cooperation needed for sound policy making

## Guiyang is part of the global consumption & production system



# Cooperation needed for sound policy making

## Lessons in Germany over time

### Complex problems and challenges...

Pollution problems

Health problems

Poverty reduction

Need for innovation

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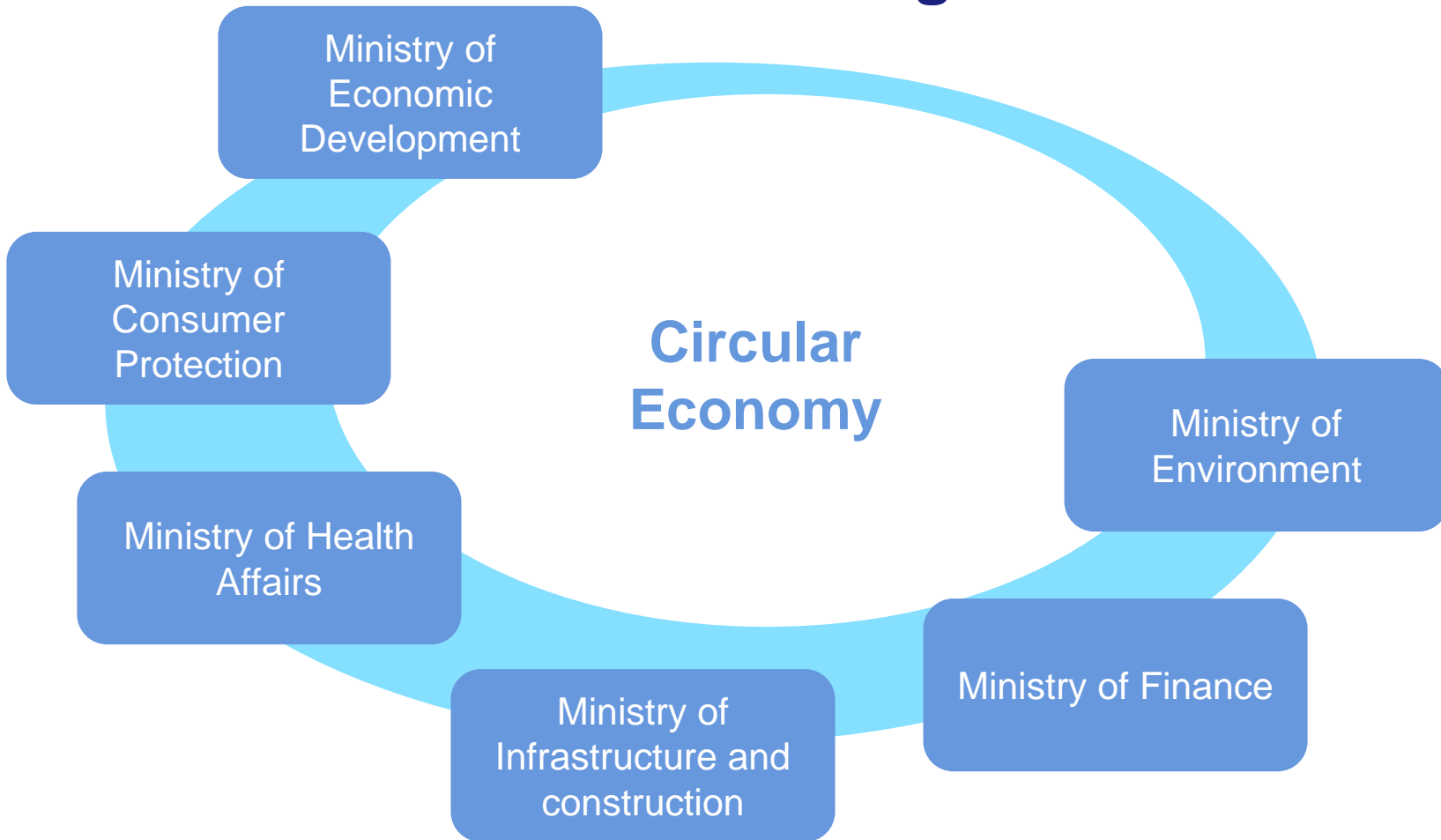


...need to be solved by cooperation

# Cooperation needed for sound policy making

## Ministries involved in Circular Economy in Germany

**Coordinate between different governmental areas**



# How governments can steer societies towards SCP

## Policies to create solutions at multiple levels

### International level



International Expert Meetings

**Coordinate  
between different  
governance levels**

### Regional and national initiatives

**e.g.**

Market-based instruments

Informational instruments

Strategies (e.g. CE)

Dialogue Processes

### Local SCP policies

Eco-industrial parks

Business support centres

Local partnerships

**e.g.**

Environmental Technology

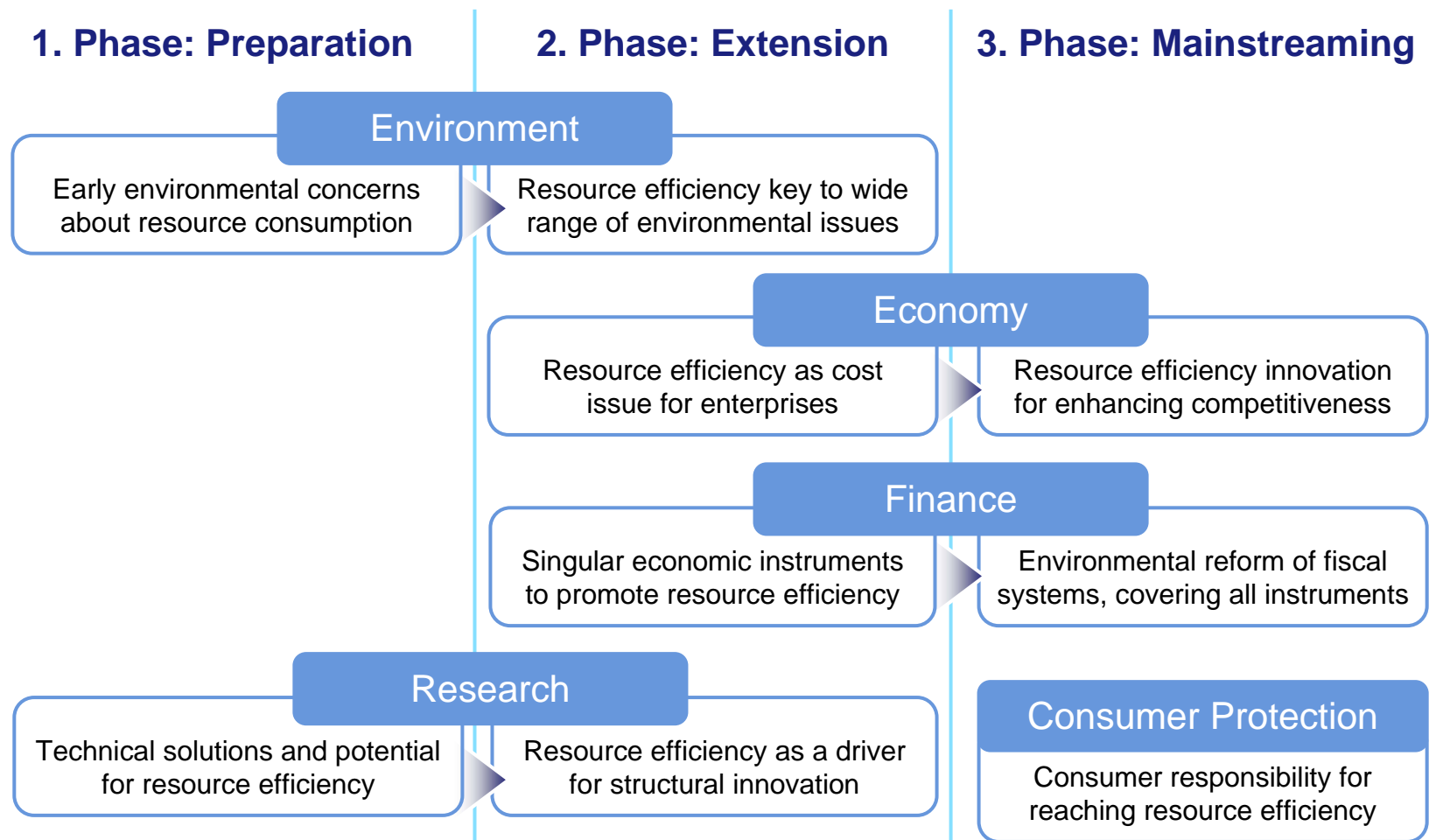
Renewable Energy

Cleaner Production

# Cooperation needed for sound policy making

## Dialogue between businesses and policy makers

### Example: Resource efficiency

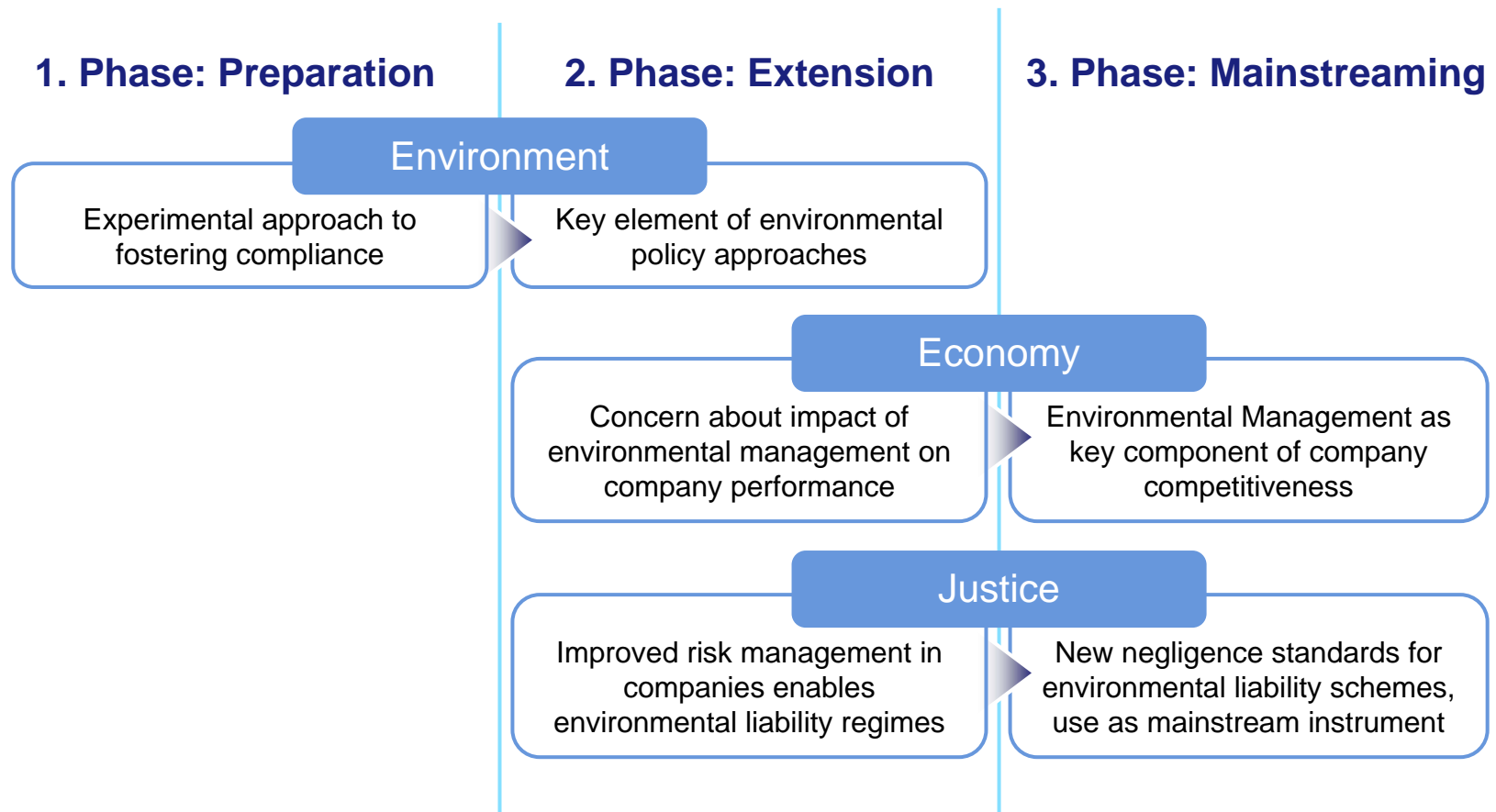




# Cooperation needed for sound policy making

## Dialogue between businesses and policy makers

# Example: Environmental Management Systems (EMS)



# Cooperation needed for sound policy making

## The case of the CSCP



UNEP/Wuppertal Institute  
Collaborating Centre on  
Sustainable Consumption and  
Production (CSCP)

**Wuppertal Institute**

for Climate, Environment  
and Energy

**UNEP**

United Nations  
Environment Programme

## Cooperation project supported by...

### Regional Level

North Rhine-Westfalian  
Ministry for Environment,  
Agriculture and Consumer  
Protection

### Federal Level

Federal Ministry  
for Economic  
Cooperation and  
Development

Federal Ministry for the  
Environment, Nature  
Conservation and  
Nuclear Safety

### Local Level

Business and  
Employment  
Support Agency

# Policy reinforcement for Circular Economy

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How governments can steer societies towards SCP

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Cooperation needed for sound policy making

---

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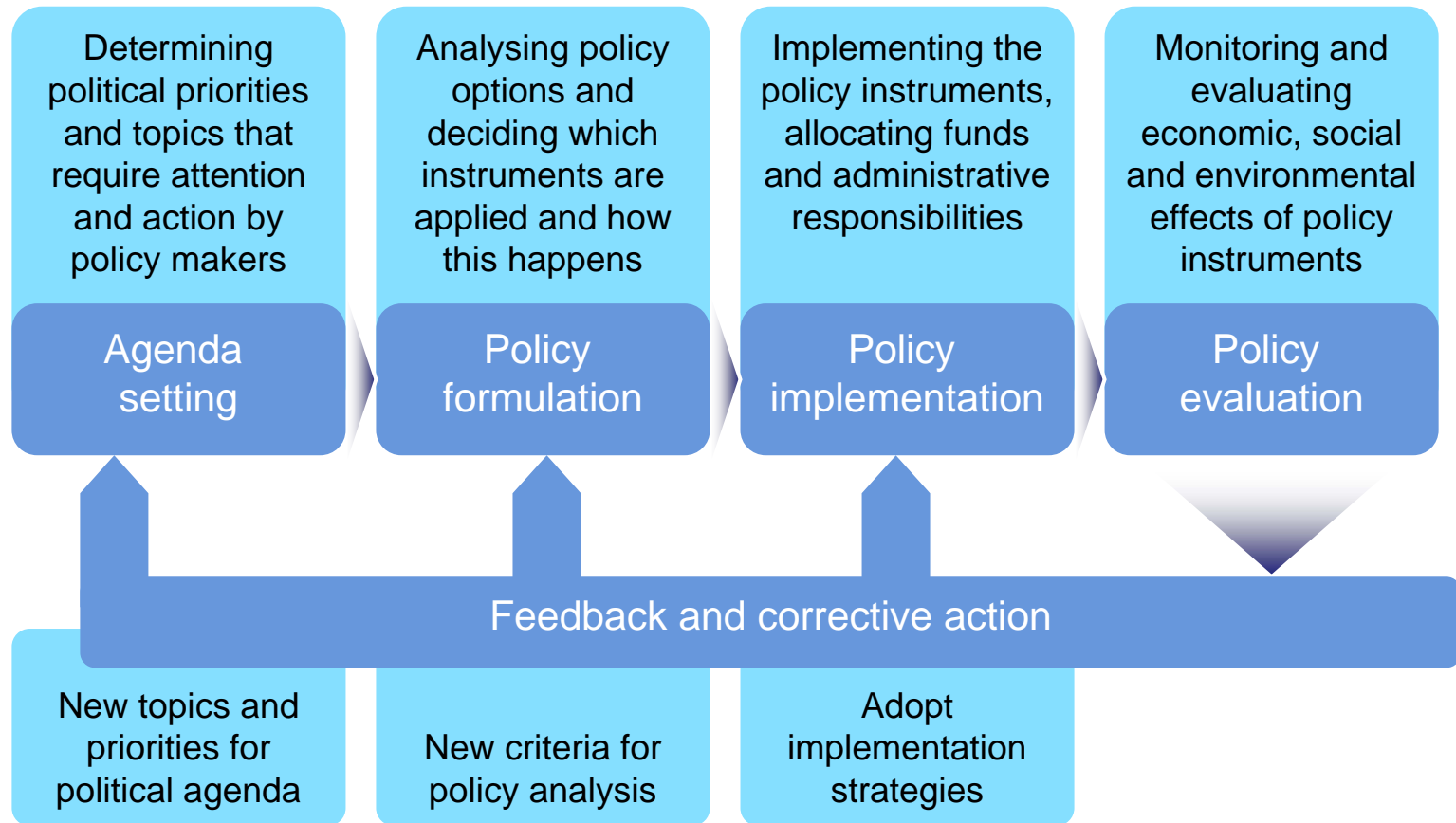
Opportunities for SCP along the policy cycle

Opportunities for SCP along the policy cycle

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# Opportunities for SCP along the policy cycle

## The policy cycle



# The policy cycle

# Opportunities for SCP along the policy cycle

## The policy cycle



- Integrating SCP thinking and objectives in all policy development and implementation
- Overcoming perception that sustainability concerns are not secondary elements and drawbacks to rapid growth and poverty reduction
- Developing better understanding of the value of SCP for businesses and consumers

### Example:

#### SCP-related strategies on EU level

- Lisbon Strategy (Competitiveness, Employment)
- EU Sustainable Development Strategy
- Sixth Community Environment Action Programme
- Thematic Strategy on the Sustainable Use of Resources
- International Panel on Natural Resources
- Thematic Strategy on the prevention and recycling of Waste
- Thematic Strategy on the Urban Environment
- Environmental Technology Action Plan
- Integrated Product Policy

Source: CSCP, UN-DESA, UNEP: Costa Rica background paper, SEPA: China Roundtable on SCP

# Opportunities for SCP along the policy cycle

## The policy cycle



- Using a well-designed **‘policy-mix’ with flexible approaches**
- Include **positive incentives** and assistance since strict ‘command and control’ regulations do not work well in all frameworks
- Need for **voluntary agreements** and other policy instruments that compensate for weak regulatory enforcement capacity
- Working with the **markets dynamics** and identify and tackle market failures/stimulating innovation
- **Involve industry** in the development of legislation, regulation and other governmental incentives

Regulatory



Economic



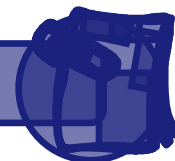
Cooperation



Education & Research



Information



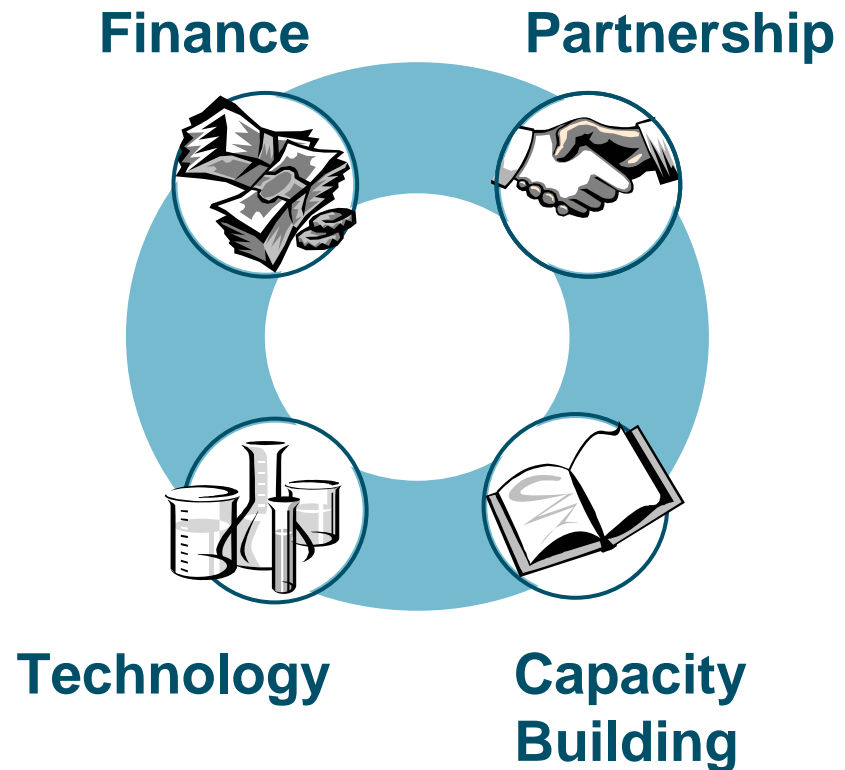
Source: Defra: Changing patterns; CSCP, UN-DESA, UNEP: Costa Rica background paper

# Opportunities for SCP along the policy cycle

## The policy cycle



- Improve enforcement of environmental regulations by addressing the shortages in financial, technical and human resources
- Involving businesses into the SCP agenda, possibly through intermediary bodies like chambers of commerce/trade associations
- Need for equality, clarity and predictability in regulatory frameworks



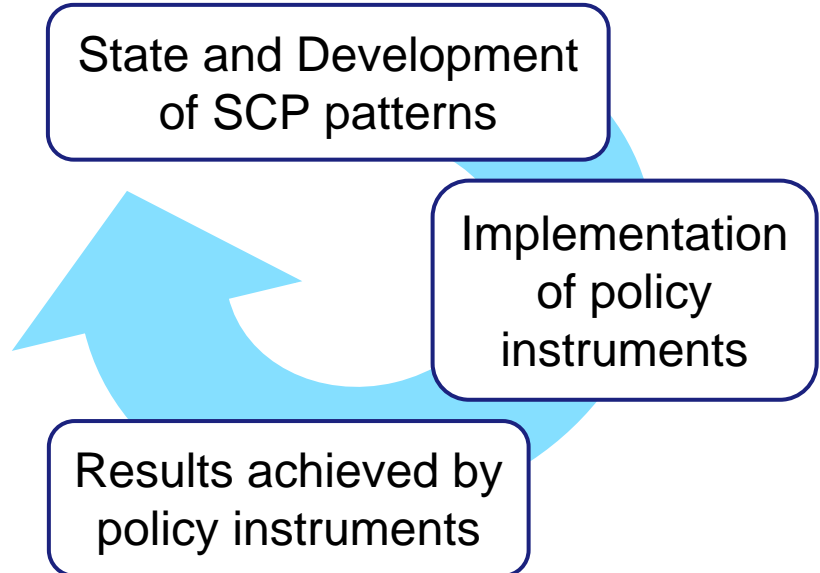
Source: Defra: Changing patterns; CSCP, UN-DESA, UNEP: Costa Rica background paper

# Opportunities for SCP along the policy cycle

## The policy cycle



- SCP indicators help to monitor implementation and effectiveness of policy initiatives
- Few systematic SCP indicator sets developed so far, but some integrated into general sustainability indicator sets
- Opportunities for cross-country exchange of information and learning processes



Source: Defra: Changing patterns; CSCP, UN-DESA, UNEP: Costa Rica background paper



# Think5

## The SCP policy toolbox: Supporting Guiyang government to address opportunities

The importance of governments

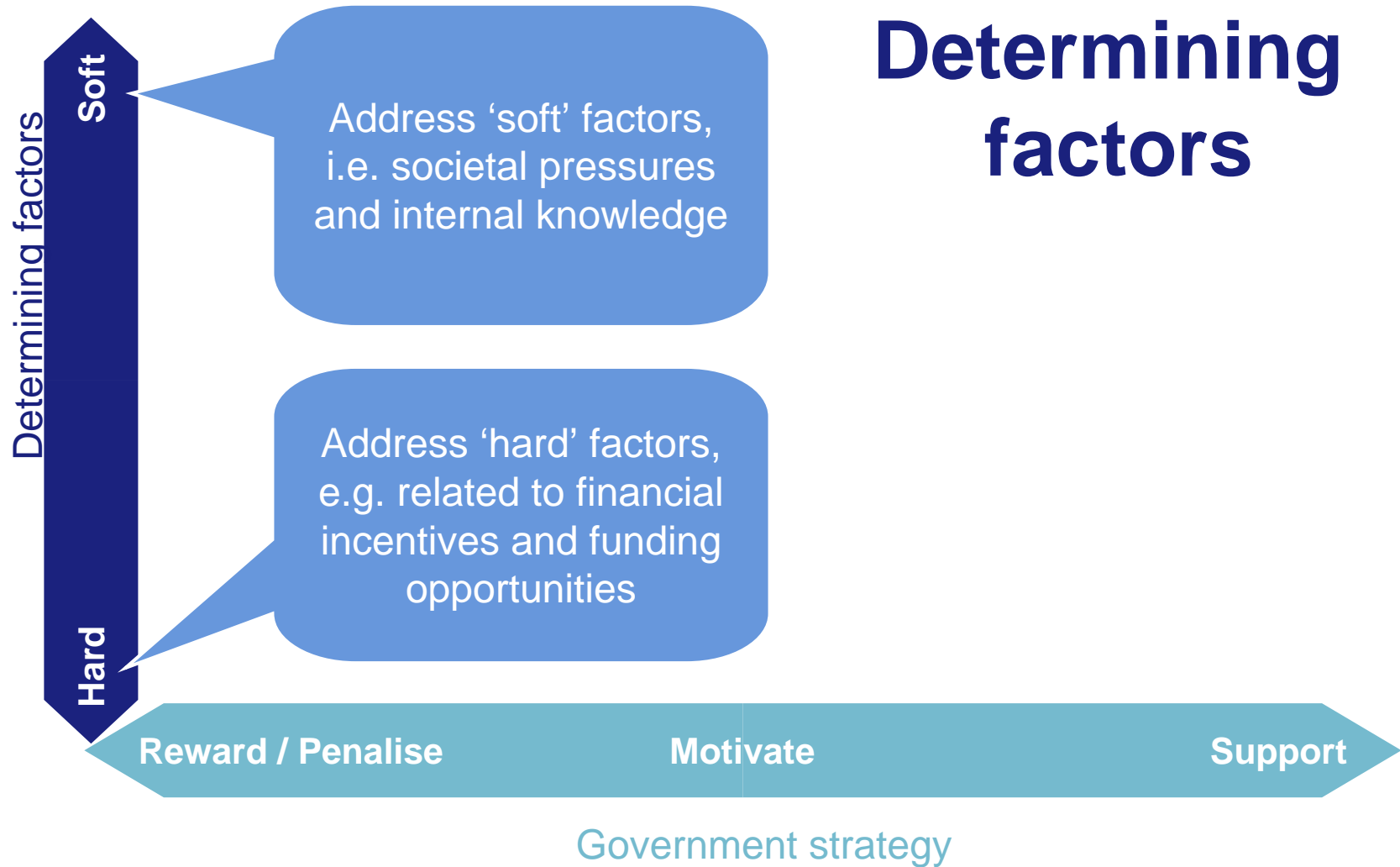
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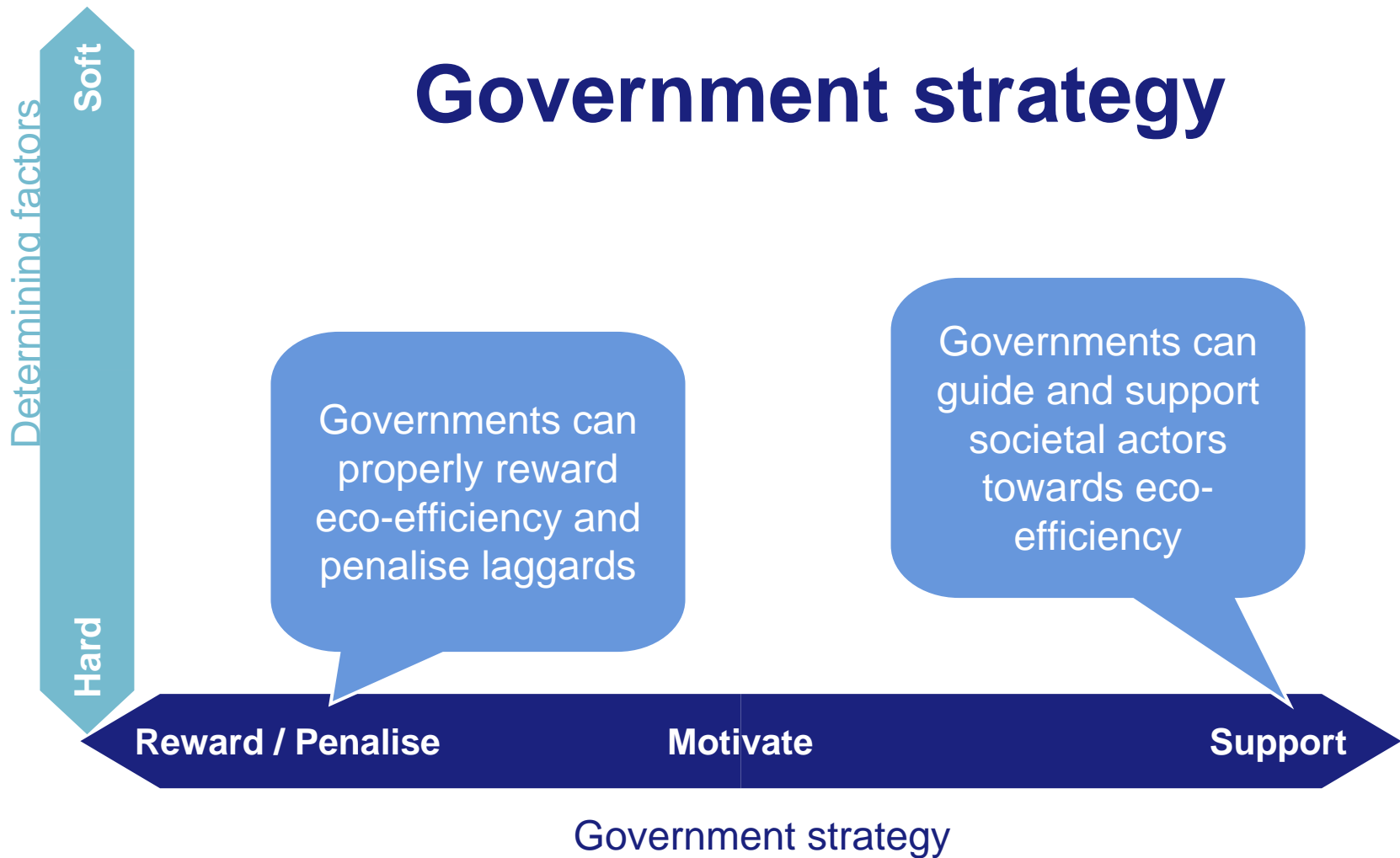
The SCP policy toolbox

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# The SCP policy toolbox

## Determining factors for SCP





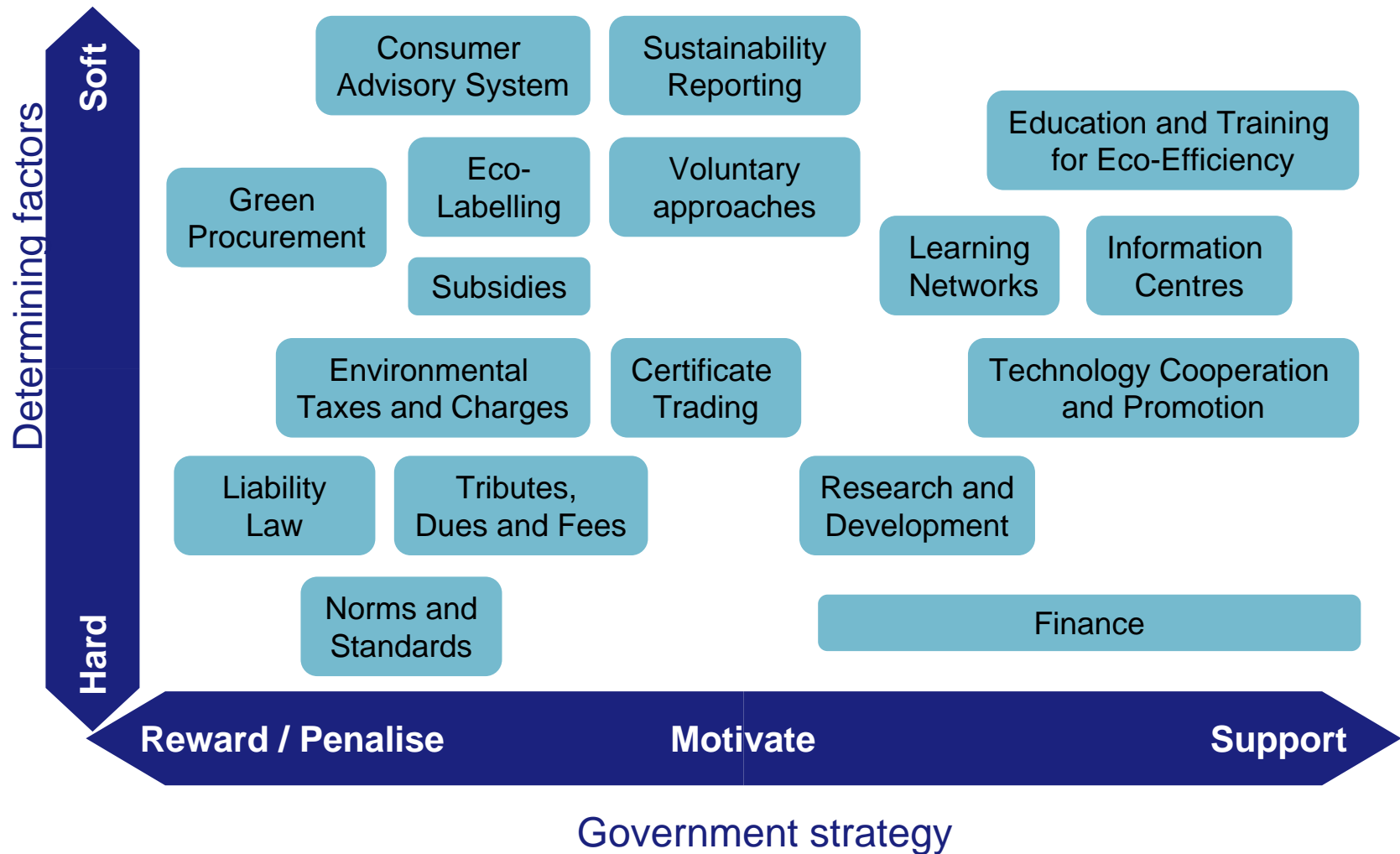
# The SCP policy toolbox

## Sample issues in the matrix



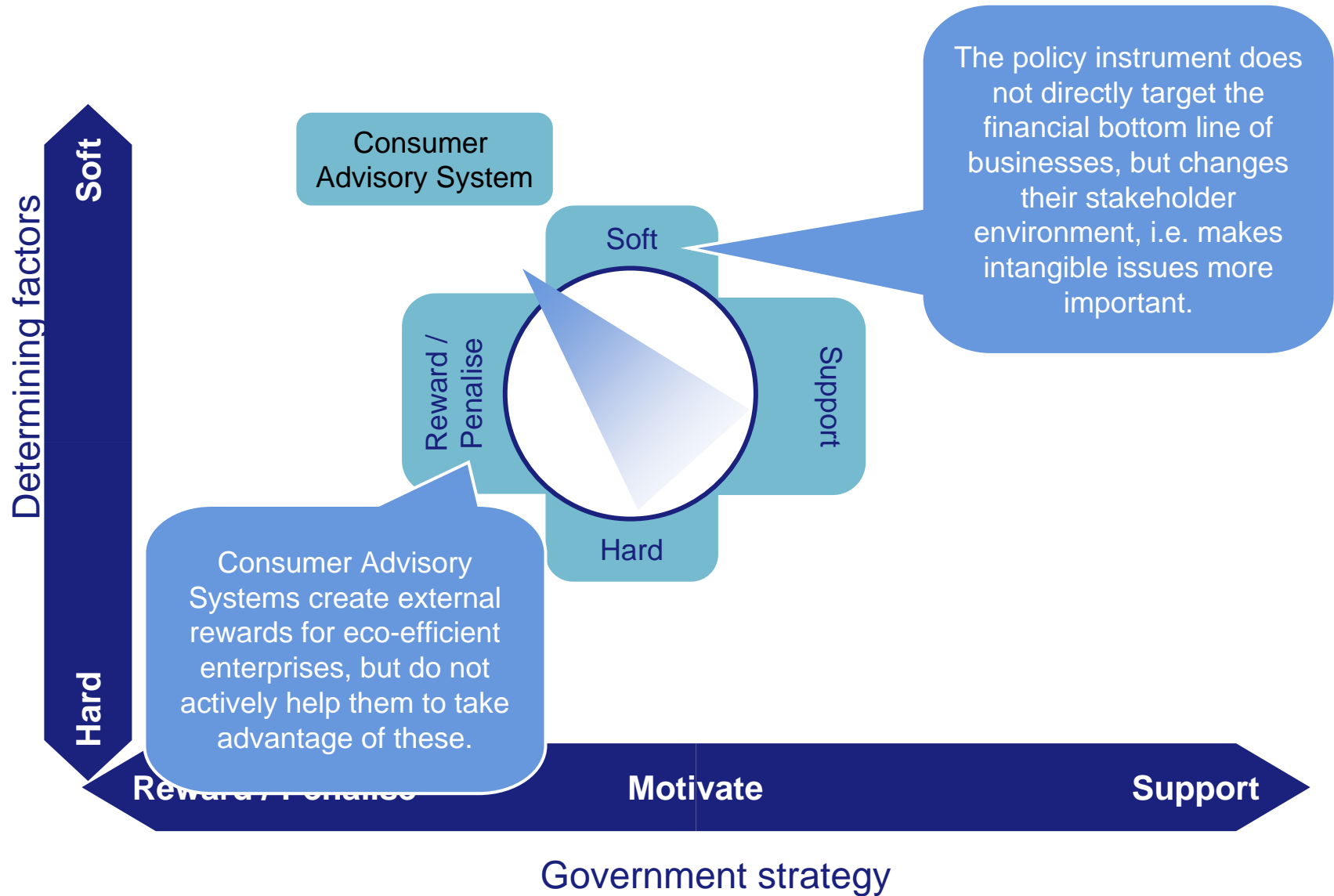
# The SCP policy toolbox

## SCP policy instruments in the matrix



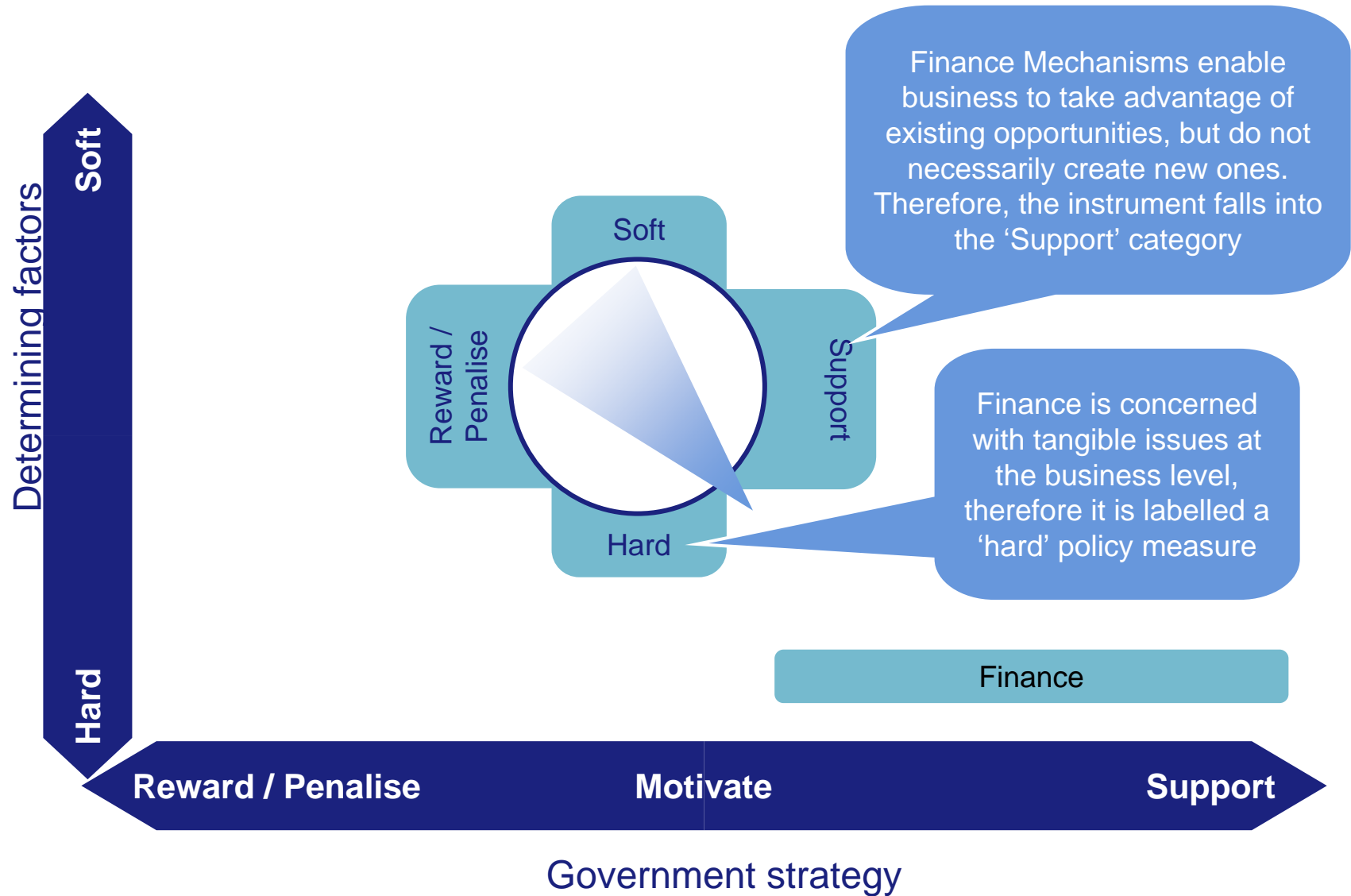
# The SCP policy toolbox

## Example: Consumer Advisory System



# The SCP policy toolbox

## Example: Finance



# The toolbox!

## Regulatory

- Norms & Standards
- Liability Laws



## Economic

- Environmental Taxes and Charges
- Tributes, dues and fees
- Certificate Trading
- Green public procurement
- Subsidies
- Finance Mechanisms



## Education & Research

- Research and Development
- Education and Training



## Information

- Eco-labelling
- Sustainability Reporting
- Consumer advice
- Information centres



## Cooperation

- Voluntary approaches
- Learning networks
- Technology cooperation and promotion
- Self-commitments





# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Think5

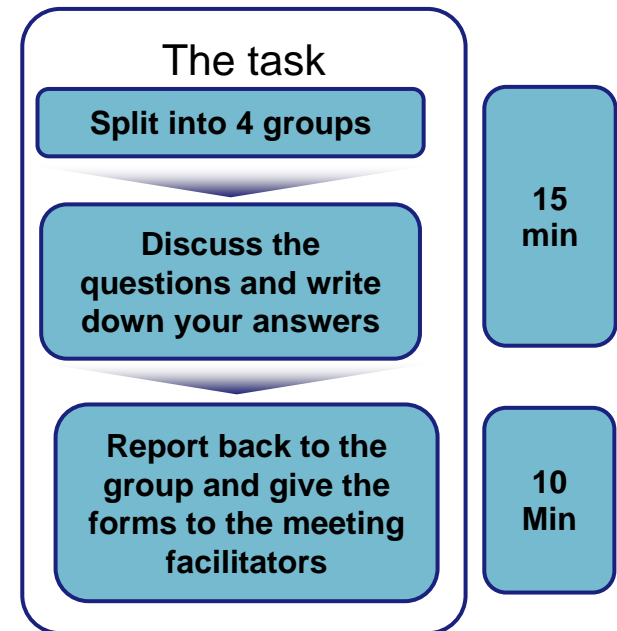
Group exercise: Supporting governments to address opportunities

# Group Exercise

## The importance of governments

1. Four groups with a mix of participants from different departments.
2. What could be done to enhance coordination and cooperation between different government departments?
3. What is most effective and what is needed to help make the necessary changes?

### What do we do?





# Think6

Summary of 'Thinking Circular Economy – Concepts and Principles'

# Day 1 – Summary

## ‘Thinking Circular Economy - Concepts & Principles’

### Think2

What is CE / SCP and why does it matter?

### Think3

The situation in China

### Think4

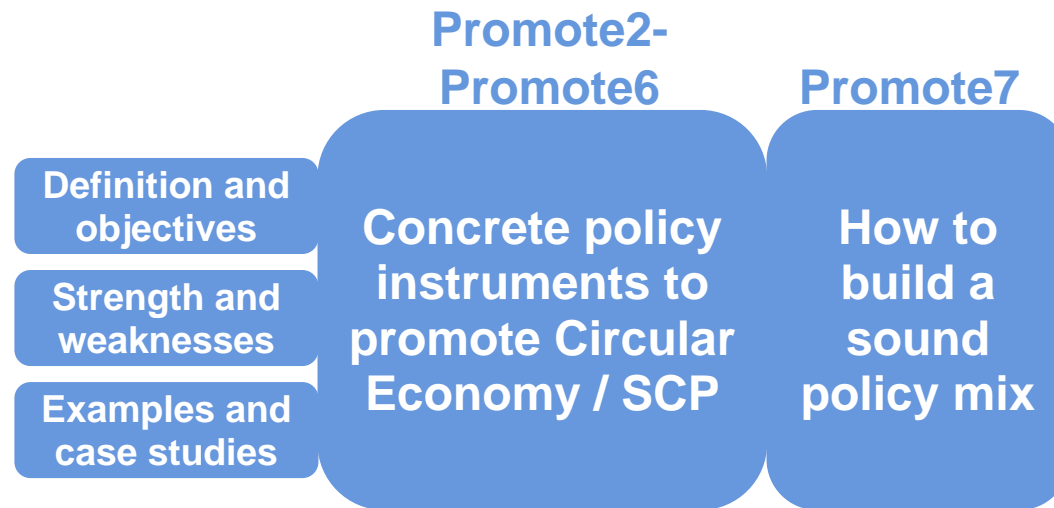
Enabling means to promote CE / SCP

### Think5

The role of governments

# Day 2 – Outlook

## – Measures & Instruments’



# Day 2

## ‘Promoting Circular Economy

### – Measures & Instruments’

**Promote1** Overview on ‘Promoting CE - Measures & Inst

**Promote2** Regulatory Instruments: Setting the rules

**Promote3** Economic Instruments: Getting the prices right

**Promote4** Cooperation Instruments: Initiating cooperations

**Promote5** Educational and Research: Educating and crea

**Promote6** Informational instruments: Providing targeted in

**Promote7** Bringing the pieces together: Designing a sound p

**Promote8** Summary of ‘Promoting CE - Measures & Instrumen

**See you  
tomorrow!**





# Training Packages on Policies of SCP and Circular Economy

Policy Reinforcement for Environmentally Sound and Socially

Responsible Economic Development in China (PRODEV)



The Second Day

# Promote1

**‘Promoting Circular Economy  
– Measures & Instruments’**

# Day 1 – Recap ‘Thinking Circular Economy -

## Concepts & Principles’

Think2

What is CE /  
SCP and why  
does it  
matter?

Think3

The situation  
in China

Think4

Enabling  
means to  
promote CE /  
SCP

Think5

The role of  
governments

### Objectives of 'Promoting Circular Economy'

- Achieve a good overview and profound knowledge on a wide variety of policy instruments that support policy-makers in setting up a sound framework for implementing CE.
- Get an overview of the latest state-of-the-art on policy making best practices and experiences in the field of CE and SCP.
- Be aware of the benefits of designing sound and integrated policy mixes that support CE and SCP.

# Day 2 – Overview

## Promoting Circular Economy

### - Measures & Instruments'

#### Promote2

**Regulatory  
Instruments: Setting  
the rules**

#### Promote3

**Economic  
Instruments:  
Getting the prices  
right**

#### Promote4

**Cooperation  
Instruments:  
Initiating  
cooperation  
initiatives**

#### Promote5

**Education and  
Research  
Instruments:  
Educating and  
creating awareness**

#### Promote6

**Information  
Instruments:  
Providing targeted  
information**

#### Promote7

**Bringing the pieces  
together: Setting  
up the framework  
and designing a  
sound policy mix**

# Day 2

## ‘Promoting Circular Economy - Measures & Instruments’

**Promote1** Overview on ‘Promoting Circular Economy - Measures & Instruments’

Objectives and overview for Day 2

**Promote2** Regulatory Instruments:  
Setting the rules

Norms and Standards

Liability law, liability directives

**Promote3** Economic Instruments:  
Getting the prices right

Environmental Taxes, Fees and user charges

Certificate trading schemes

Green/sustainable procurement

**Promote4** Cooperation instruments:  
Initiating cooperation  
measures

Technology transfer

Voluntary agreement

Clean Production Commitments

# Day 2

## ‘Promoting Circular Economy

## - Measures & Instruments’

<b>Promote5</b>	Educational and Research Instruments: Educating and creating awareness	Research and development, applied research Education and training
<b>Promote6</b>	Informational Instruments: Providing targeted information	Labelling for goods and services, eco-labelling Information centres, Consumer information, consumer advisory system Public reporting
<b>Promote7</b>	Bringing the pieces together: Setting up the framework and designing a sound policy mix	What is a sound policy mix? Identifying obstacles Setting objectives and next steps
<b>Promote8</b>	Summary of ‘Promoting Circular Economy - Measures & Instruments’	Summary of Day 2 Outlook of Day 3

# Let's get started!



# Promote2

## Regulatory Instruments: Setting the Rules

# Policy Reinforcement for Circular Economy

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Introducing regulatory instruments

An overview of regulatory instruments

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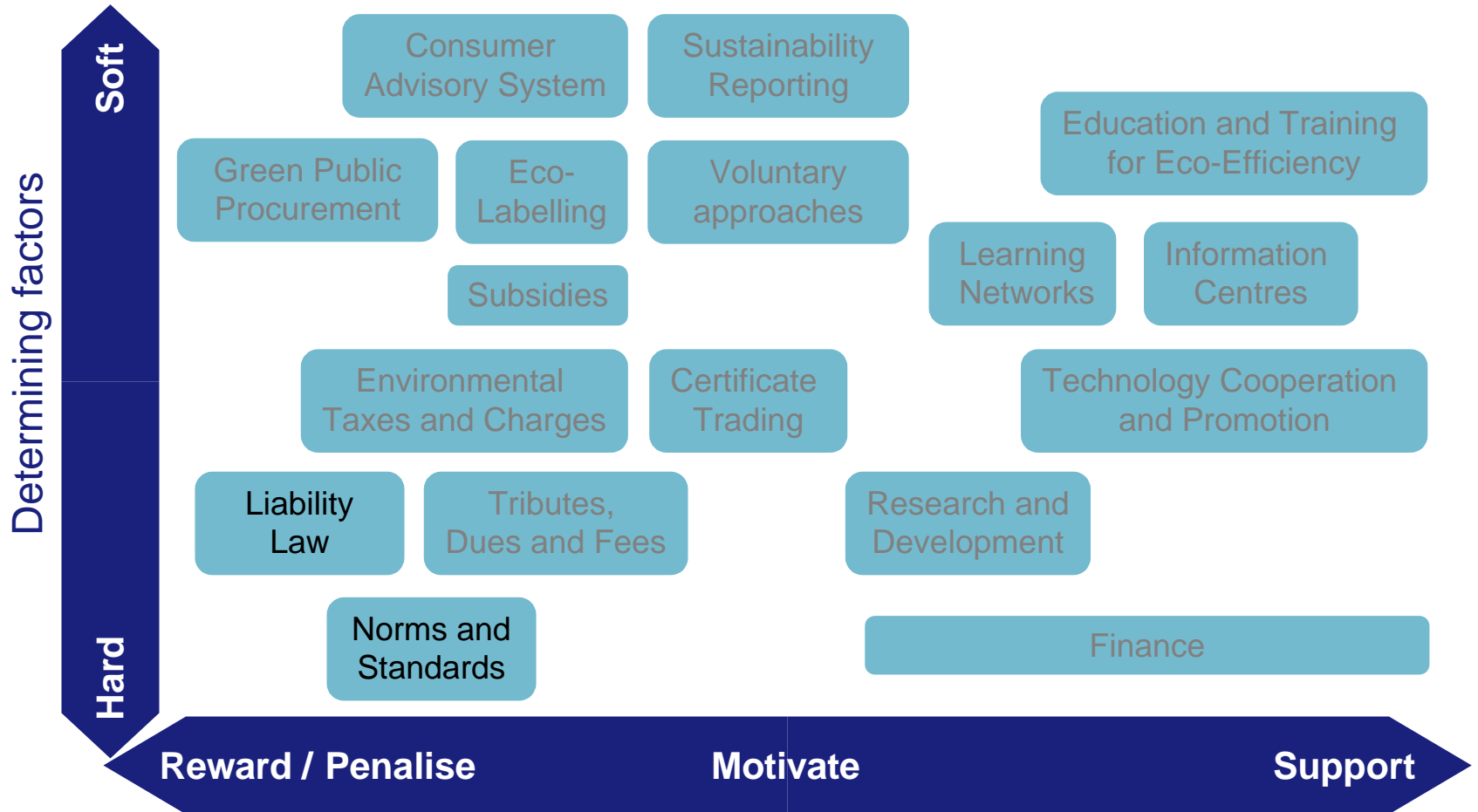
Regulatory instruments in focus

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# Bringing the pieces together

## SCP policy instruments in the matrix

# SCP policy instruments



### What are regulatory instruments?

#### **“Command and Control”**

Principles, rules, laws and targets set and enforced by public authorities

Include laws and any rules with a legally binding nature

### Objectives

Prevent pollution by penalising rule breakers

Improve efficiency by setting targets

# Strengths and Weaknesses

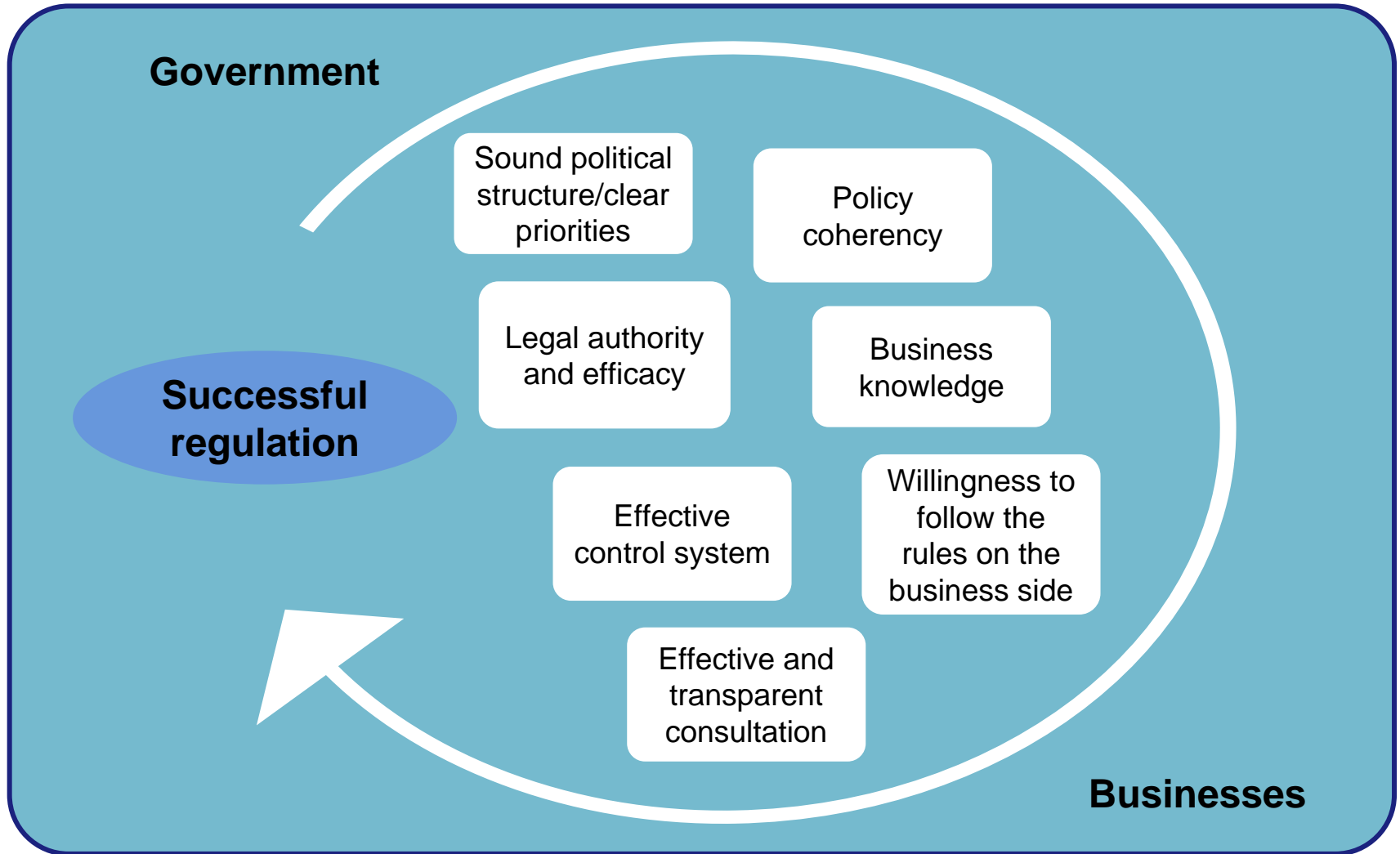
## Strengths

- Effectiveness and certainty in achieving objectives
- Relatively easy to set up
- Clarity for businesses
- Fairness on national level
- Remedial/preventive effect
- 'The first step' of environmental protection in developing countries

## Weaknesses

- High cost to enforce
- Little incentive for innovation
- Vulnerable to corruption
- High information requirements
- Judicial/financial burdens

### Success Factors



# Policy Reinforcement for Circular Economy

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An overview of regulatory instruments

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Norms and Standards  
Liability Laws

Regulatory instruments in focus

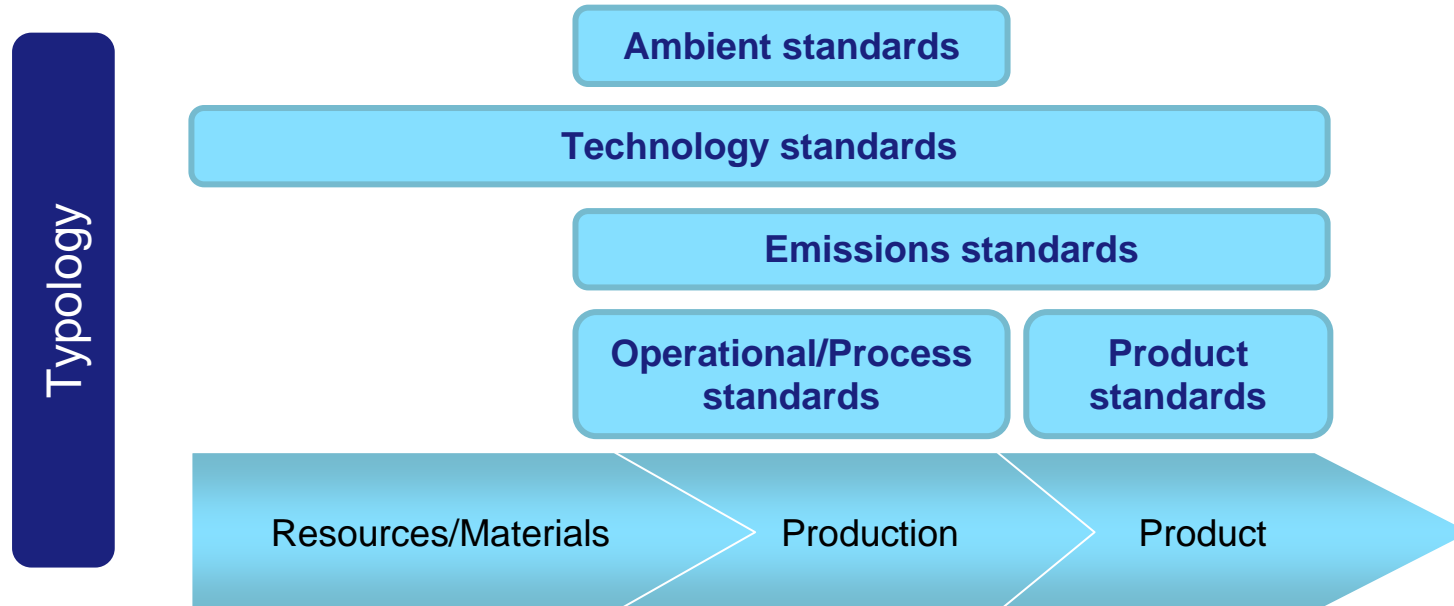
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### Norms and Standards

#### Definition & Regulated Groups

Statutes, directives and technical specifications set by public authorities ('command') and enforced by compliance procedures ('control')

Target mainly businesses but also private consumers





# Regulatory instruments in focus

## Case Study: Air Quality Control, Germany

### Air Quality Control in Germany

#### Goals

**Protection:** Protect the general public and the neighbourhood against harmful effects of air pollution

**Precaution:** Provide precautions against harmful effects of air pollution in order to attain a high level of protection

Air emission standard

Operator of new (and old) facility

Permission

Compliance

Approval

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Non-compliance

Sanction/Punishment

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#### Benefits

- Helpful for both industry and administration since the regulation provides legal and planning security
- Sound instrument for controlling air pollution: provision of a unified approach, having impact on air quality standards in other countries

# Japan's Top Runner Programme

## Characteristics

Objective: **Improve energy efficiency in the use phase of the products**

Governing body: Ministry of Economy, Trade and Industry (METI)

## Innovative Standard Setting

The product with the highest energy efficiency becomes the benchmark of the standards.

## 'Soft' Enforcement

Voluntary but manufacturers risk negative reputation if they did not achieve the standards.

## Positive Impacts

Manufacturers have been achieving more than the requirement.

# Regulatory instruments in focus

## Case Study: Top Runner Programme, Japan (2)

# Top Runner Programme

### Timeframe

1998

3-12 years, depending on product category

2010

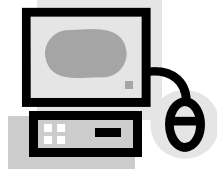
Point of  
reference

Target  
year

### Standard setting

Within the same product group, differentiated standards are set reflecting one or more parameters (function, size, weight, type of technologies used, type of fuel, etc.) The potential for technological innovation and diffusion is taken into account.

### Reduction targets in weighted-average energy consumption



Computers: 83%



Air conditioners: 63%



Vehicles: 23%



Refrigerators: 30%



Video recorders: 59%

# Regulatory instruments in focus

## Case Study: Top Runner Programme, Japan (3)

# Top Runner Programme

## Monitoring

**Tools:** Mandatory information and voluntary labelling on achieved energy efficiency.

**Sanction:** 'Name and shame' = negative publicity, order to comply or fines

**Review:** Standards/timeframes are reviewed at target year arrives or when some products already met the standards.

## Positive results & challenges

**Motivation for design change**

**Significant efficiency improvements**

**Diffusion of innovation**

**Low administrative costs**



**Changing purchasing behaviour (new products are costly)**

**Addressing smaller producers ('name and shame approach may not work')**

**Harmonising measurement methods and standards on a global scale**

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## Presentation by SEPA

# Liability Law

## Principle

“**Polluter Pays Principle**”: Let the causer of environmental damage pay for remedying

## Objectives

- Compensate parties who have suffered injury or damage (individuals and ‘society’)
- Provide a direct incentive not to pollute and to reduce environmental risks in the first place

## Typology

**Strict liability (no fault liability):** target damage caused regardless of behaviour

**Negligence based liability (fault-based):** target damage attributable to behaviour

## Targets

Industrial accidents or gradual pollution caused by hazardous substances or waste from identifiable sources...

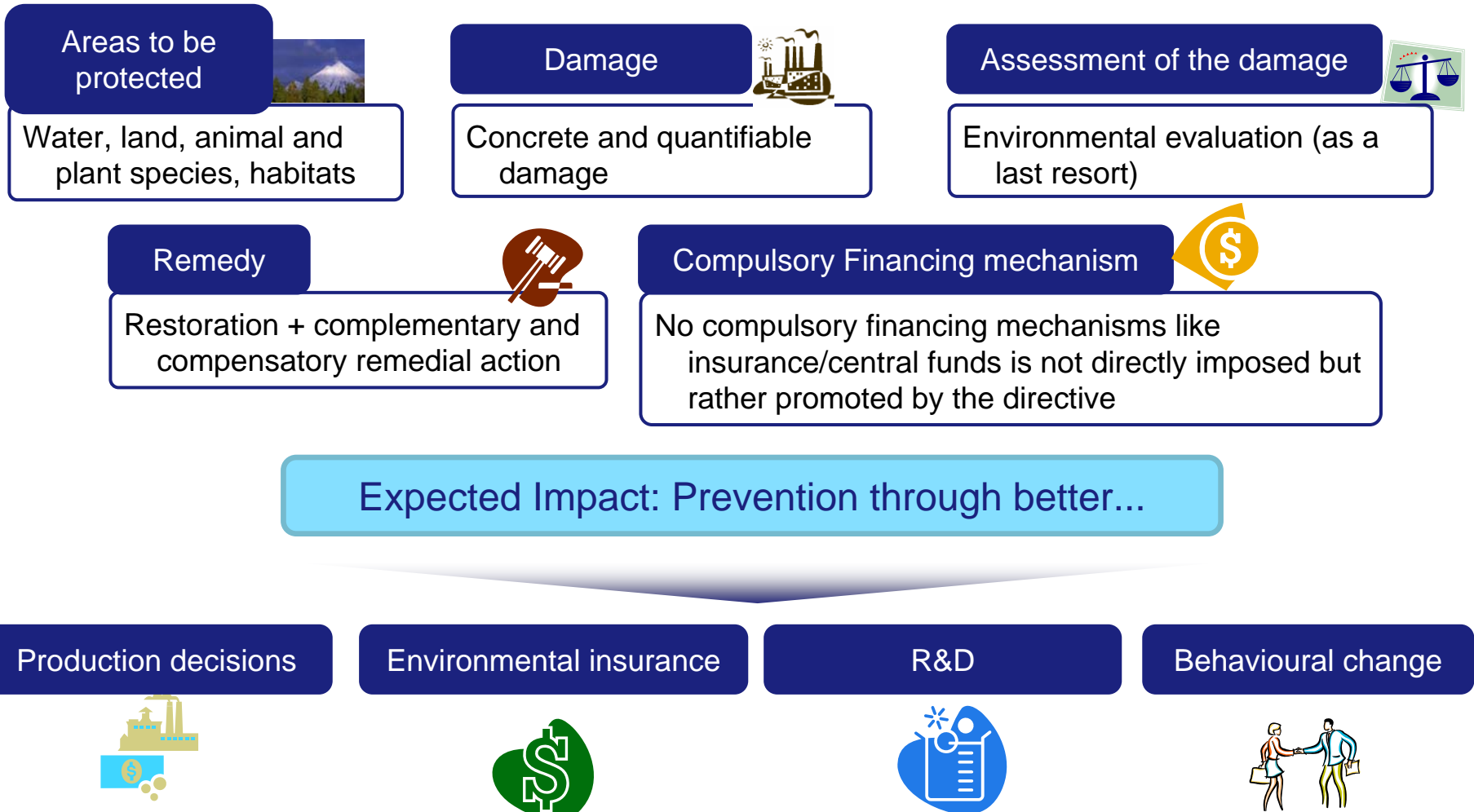
...but not for...

...dealing with widespread pollution which is impossible to link with activities of individual actors

# Regulatory instruments in focus

## Case Study: EU Environmental Liability Directive

# EU Environmental Liability Directive



# Policy Reinforcement for Circular Economy

**Thank you for your attention !!!**





# Promote2

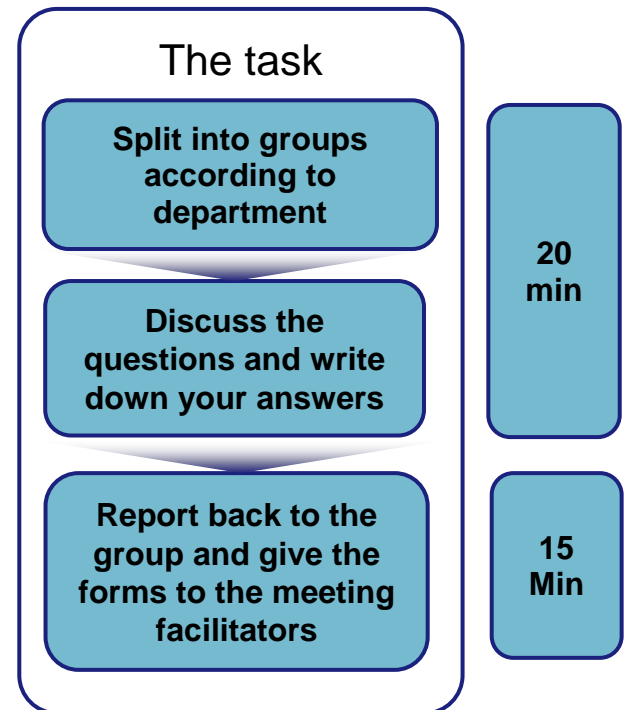
Group Exercise: Setting the Rules

# Group Exercise

## Regulatory instruments:

1. Four (or more) groups with participants from each department.
2. Which of the regulatory instruments discussed in the presentation would be most effective in China/your region?
3. At which phase of the product life-cycle will the instruments be most effective? Why?
4. Which organisation can be most effective in taking the lead?

### What do we do?



# Group Discussion

Promote2

Department \_\_\_\_\_

*Regulatory instruments can include legal restrictions and controls on emissions, activities, resource use and toxic substances. Specific instruments can include technology or environmental performance specifications, permits, quotas, licensing and material bans, mandatory environmental standards or audits, environmental labelling requirements, staff training requirements.*

QuickTime?and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

1. Which of the regulatory instruments discussed in the presentation would be most effective? Why?

Report back in 20  
Minutes



2. What instruments will be effective at different phases of the product life-cycle? Why?

3. Which organisation can be most effective in taking the lead? Why is this organisation most effective?

Report back in 20  
Minutes



# Promote3

Economic Instruments: Getting the prices right

# Policy Reinforcement for Circular Economy

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An overview of economic instruments

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An overview of economic instruments

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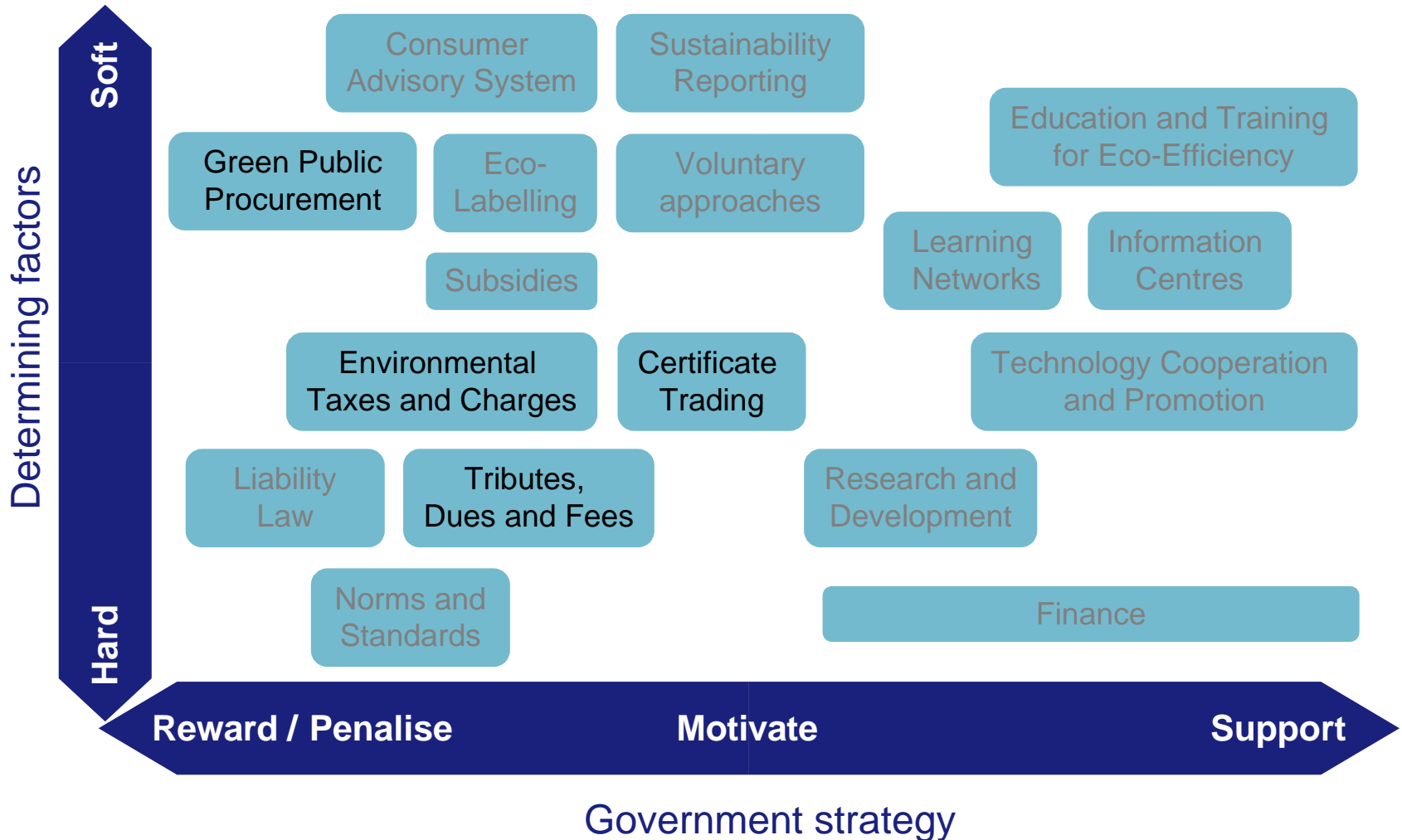
Economic instruments in focus

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# Bringing the pieces together

## SCP policy instruments in the matrix

# SCP policy instruments



# An overview of economic instruments

## Definition and Objectives

### Definition

“Economic instruments cover a range of taxation and pricing instruments that can raise revenue while simultaneously furthering environmental goals”

### Objectives

Further environmental goals

land contamination

air quality

water quality

noise

waste

Etc...

energy use

resource use

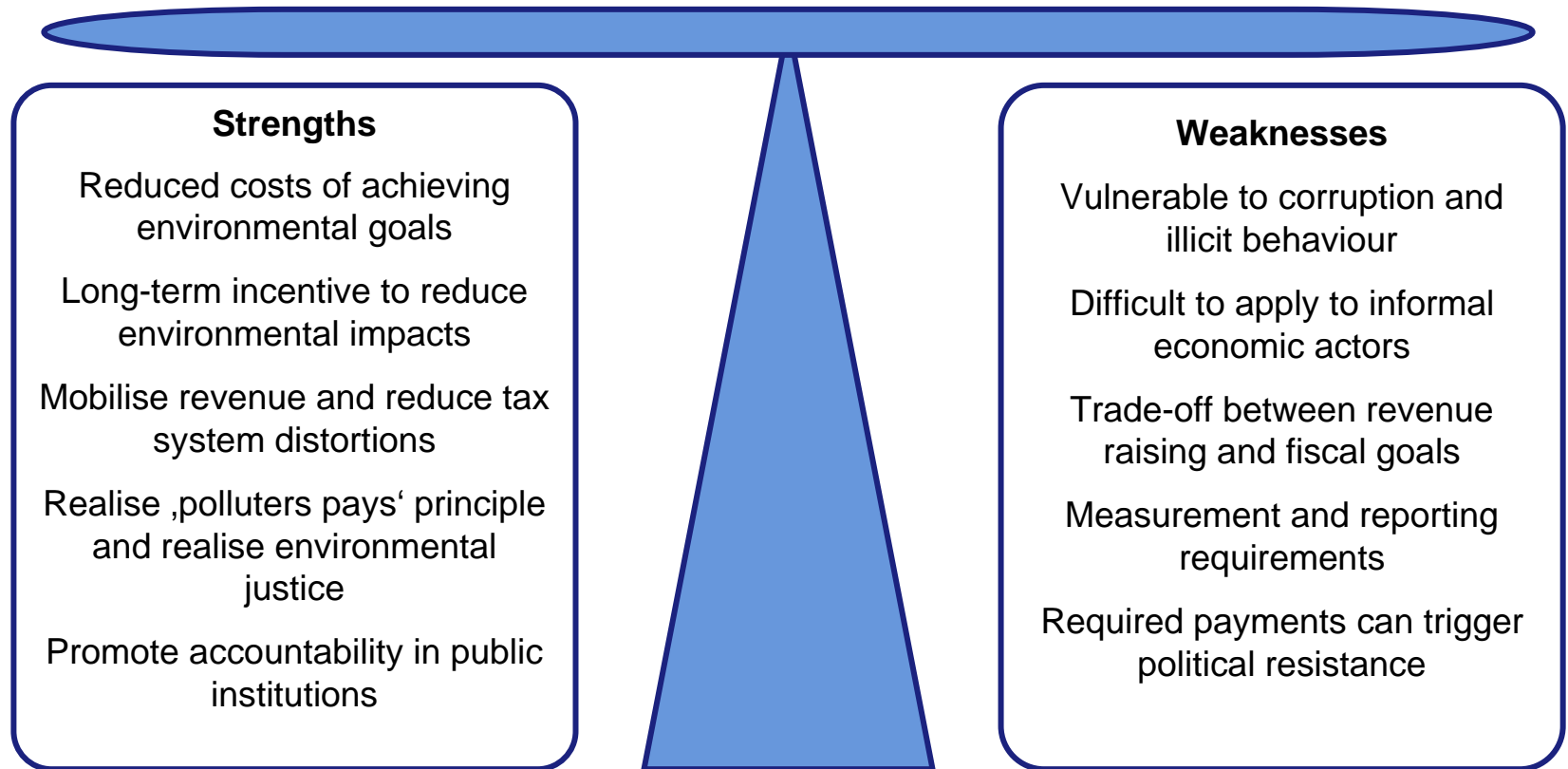
Raise revenue

General budget

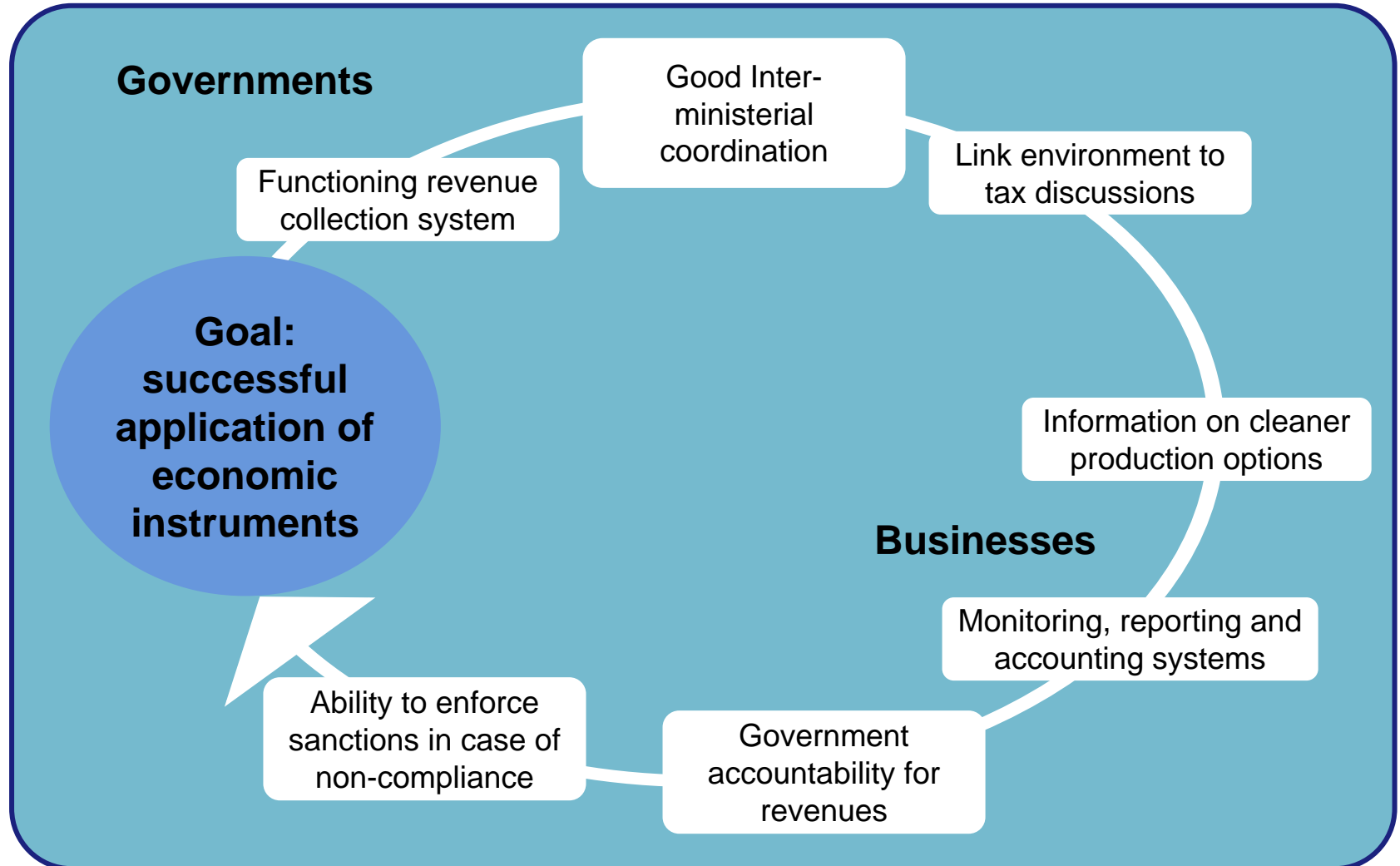
Fund environmental improvements



# Strength and Weaknesses



# Success Factors



# Policy Reinforcement for Circular Economy

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An overview of economic instruments

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Economic instruments in focus

Economic instruments in focus

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# Overview

## Environmental taxes

Make polluters pay for societal costs

## Fees and user charges

Charge users for environmental goods and services

## Certificate trading schemes

Create markets for environmental goods and services

## Green/Sustainable procurement

Create demand for eco-efficient goods and services

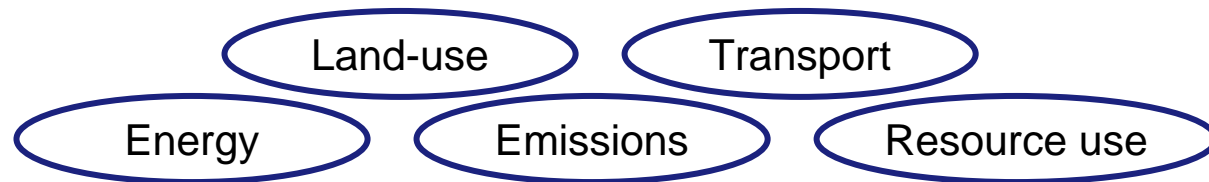
# Environmental taxes

## Make polluters pay for societal costs

Environmental taxes (or 'eco-taxes') are taxes with a potentially positive environmental impact

### Typology

Taxes might be levied on...



### Other key decisions

#### Exemptions

Exclude certain industry sectors?

#### Revenue

General budget or environmental investments?

#### Taxpayer

From business, suppliers or consumers?

# Sweden: Carbon and Energy Tax

### Policy Changes

**1991 Reform of the Energy Tax System**

**Introduction of Carbon Tax**

**Energy Tax reduced by 50%**

**Industry had to pay no energy tax and 50% carbon tax**

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**Reduction of CO<sub>2</sub>**

**Expansion of Biomass in the district heating systems**

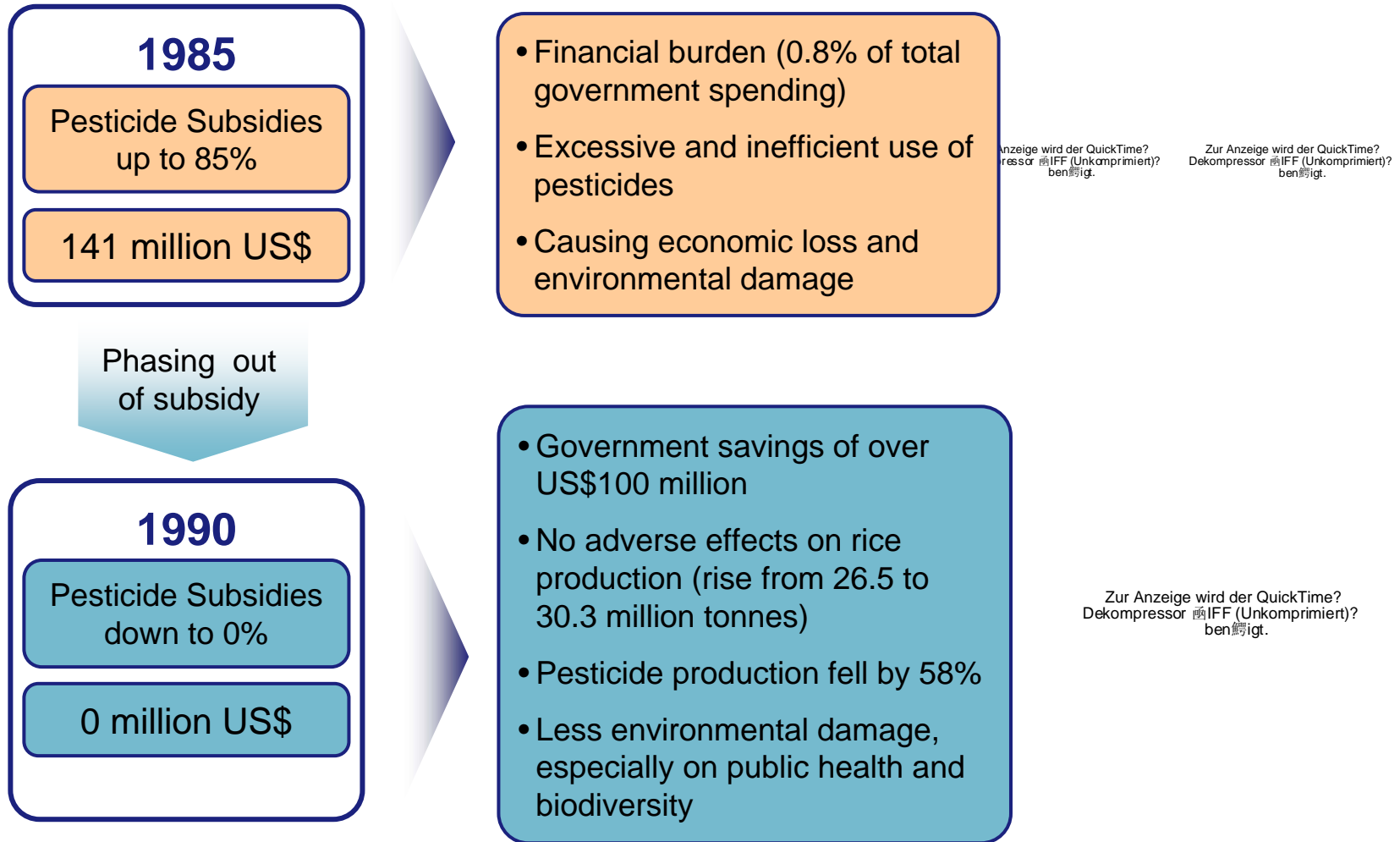
**Development of technology for biomass extraction**

**Implementation of more efficient heat plants in the district heating system**

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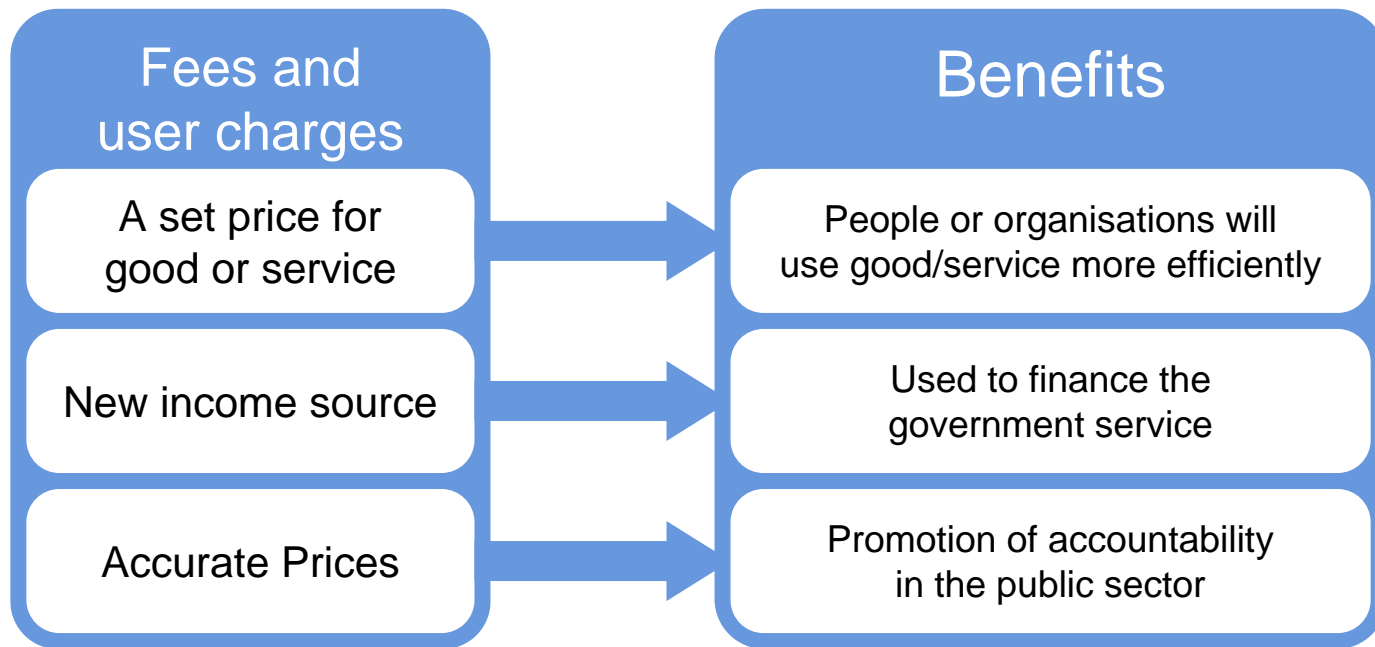
### Effects

### Indonesia: Removing Pesticide Subsidies

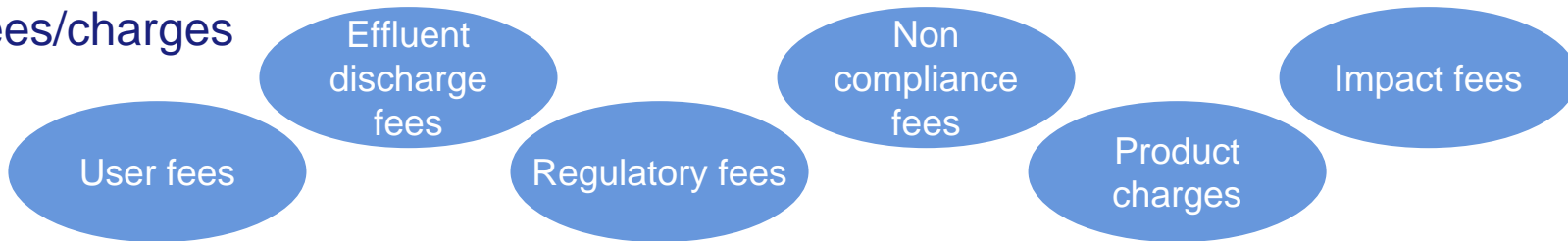


# Fees and user charges

## Charge users for environmental goods and services



### Types of fees/charges





# German Effluent Charge

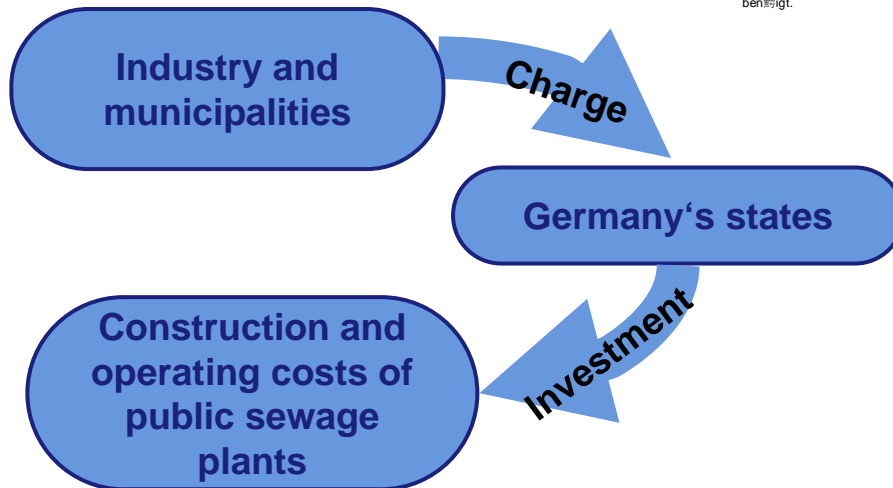
### Legal development

- Effluent Charge Act (AbwAG) passed in 1976
- Came into force in 1981
- Charges gradually increased until 1997

### Main characteristics

- Policy-mix: economic incentives within a system of direct regulation
- Economic deterrent/polluter-pays principle; penalty tax
- Supplementary to 'command-and control'-based on standard- BAT
- Goal: incentive towards reduction of water waste through prevention, waste water treatment, low-emission/zero emission processes, introduction of environmentally friendly products
- Nation-wide environmental charge
- Financial goal: subsidizing the construction of public sewage plants
- Measurement based on 'damage units'- the smaller the emissions- the smaller the charges

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# Economic instruments in focus

## Case Study: German Effluent Charge: Institutional layout

# German Effluent Charge

Federal government



Uniform pollution levels for whole Germany



Federal government



Negotiations on branch guidelines



+

States



Polluter

Industries and municipalities that discharge directly to surface waters



States

Collection of the charge- approx. 40% from industry, 60% from communities



# Economic instruments in focus

## Case Study: German Effluent Charge: How does it work?

# German Effluent Charge

Standard



Till 1986- a generally Accepted Technological Standard  
From 1986- Best Available Technology (BAT)

Charge assessment

Allowed discharges defined in state-issued permits

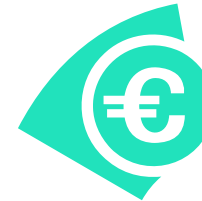


Monitoring

Left to polluters with random spot-checks by authorities

Charge

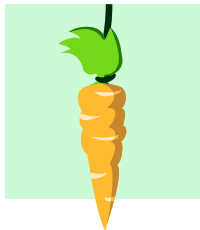
Dischargers without permits or with permits insufficient discharge limits pay charges based on their declared discharges



Incentives

Charges reduced in advance to support installation of new technology

Subsidizing the construction of public sewage plants



# Economic instruments in focus

## Case Study: German Effluent Charge: Lessons learned

# German Effluent Charge

### Strengths

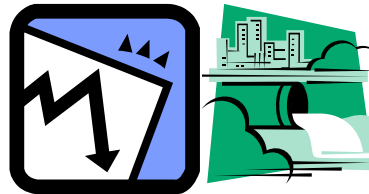
Incentives for water pollution investments



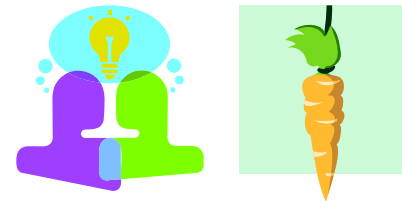
Capacity building effects within public authorities



Reduced emissions at the same time as industrial growth



Awareness/Positive incentive effects



### Challenges

Measurement problems to assess effects



Lengthy political discussion



Administrative costs (15% of charge)



Limits to efficiency



Questions about ongoing need for charges



# Congestion charging in London

introduced in 2003

- ### About
- The congestion charge is a fee paid by motorists entering the Central London Area
  - London is the largest city to introduce this charge (as of 2006)



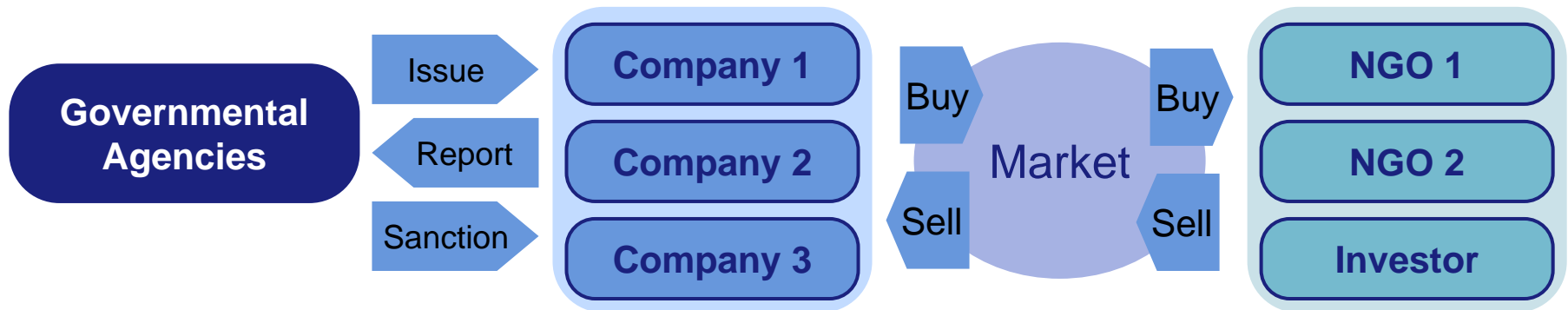
- ### Goals
- Aim is to encourage travellers to use more public transport and cleaner vehicles
  - Reducing congestion and pollution
  - Faster and more predictable journeys

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# Certificate trading schemes

Create markets for environmental goods and services

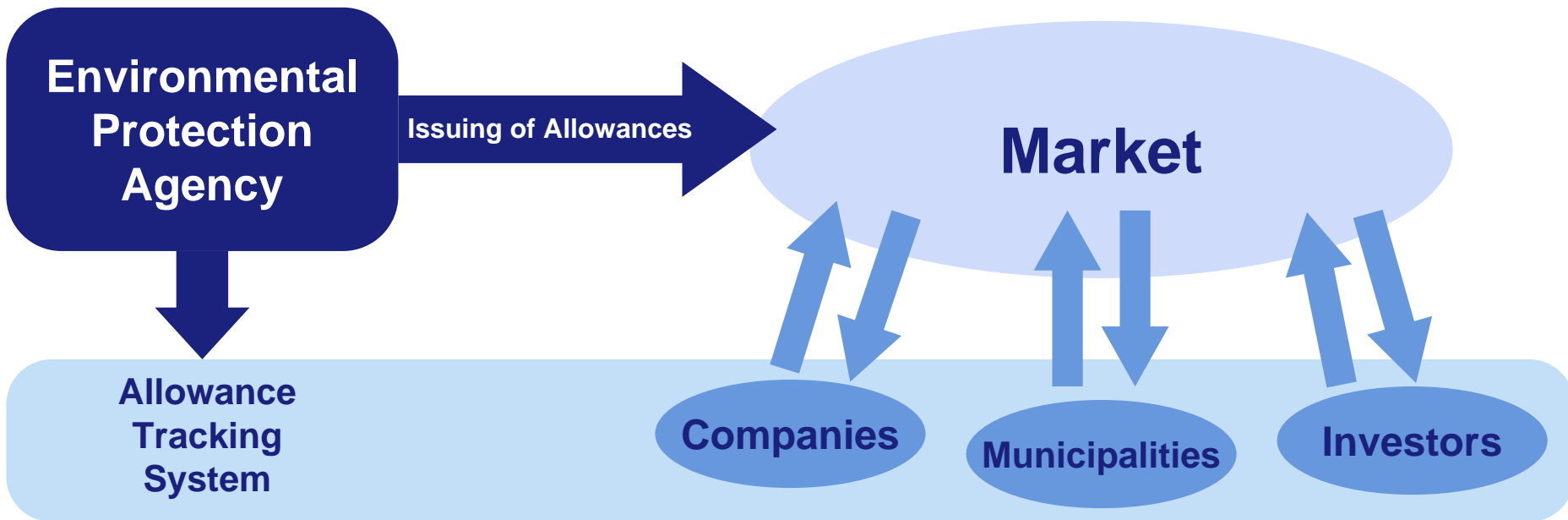


## Implementation Process



# Acid Rain Programme

## SO<sub>2</sub> Emission Allowances



### Goals

- Reduction in emission of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>)
- Achieve significant environmental and public health benefits at the lowest cost

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# Green/Sustainable procurement

Create demand for eco-efficient goods and services

## Principles

Choose products that do not consume energy or natural resources unnecessarily

Choose products that are not harmful to producers or consumers

Choose products that can be reused or recycled

## Contract Criteria

Price

Quality

Delivery

Procurement

Technical Specifications



# Mayor's Green Procurement Code London, UK

### Project Information

- Launched in 2001
- All 33 boroughs and about 500 key organisations of London are participating

### Purpose and Goals

- Organisations commit to green procurement
- 4 different levels of commitment
- The Code is helping many organisations to buy quality recycled products at competitive prices

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt.  
benötigt.

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt.  
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benötigt.

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Dekompressor benötigt.  
benötigt.

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benötigt.

## Presentation by SEPA

# Policy Reinforcement for Circular Economy

**Thank you for your attention !!!**



# Promote3

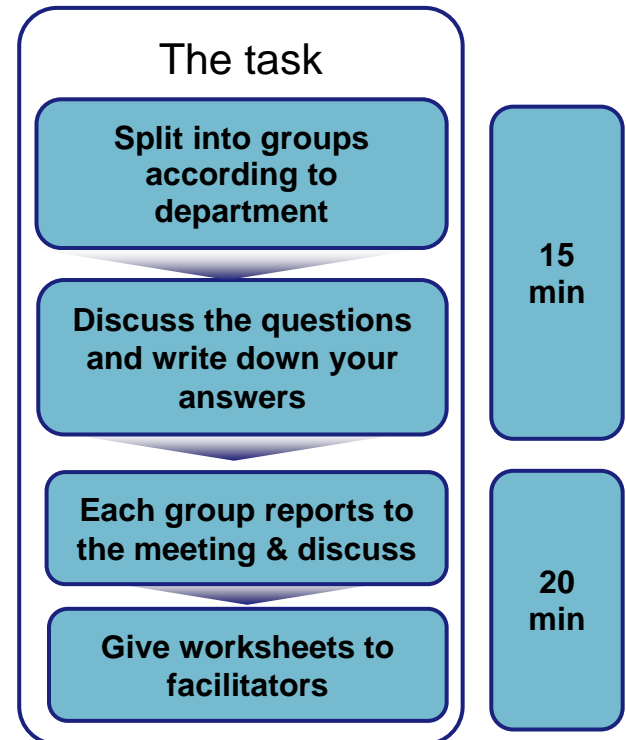
Group Exercise: Green Public Procurement

# Group Exercise

## Green Public Procurement:

1. Four (or more) groups with participants from the same department.
2. What products/services can be considered for Green Public Procurement in your city/region?
3. What products/services offer the best opportunities for advancing SCP in your city/region?

What do we do?



# Group Discussion

Promote3

## Green Public Procurement

1. What products/services can be considered for Green Public Procurement in your city/region? Why could these products be considered for Green Public Procurement?

2. What products/services offer the best opportunities for advancing SCP in your city/region? Why do these products offer the best opportunity?

Report back in 15  
Minutes



# Promote4

## Cooperation Instruments: Initiating Cooperation Initiatives

# Policy Reinforcement for Circular Economy

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Introducing cooperation  
instruments

An overview of  
cooperation instruments

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Cooperation  
instruments in focus

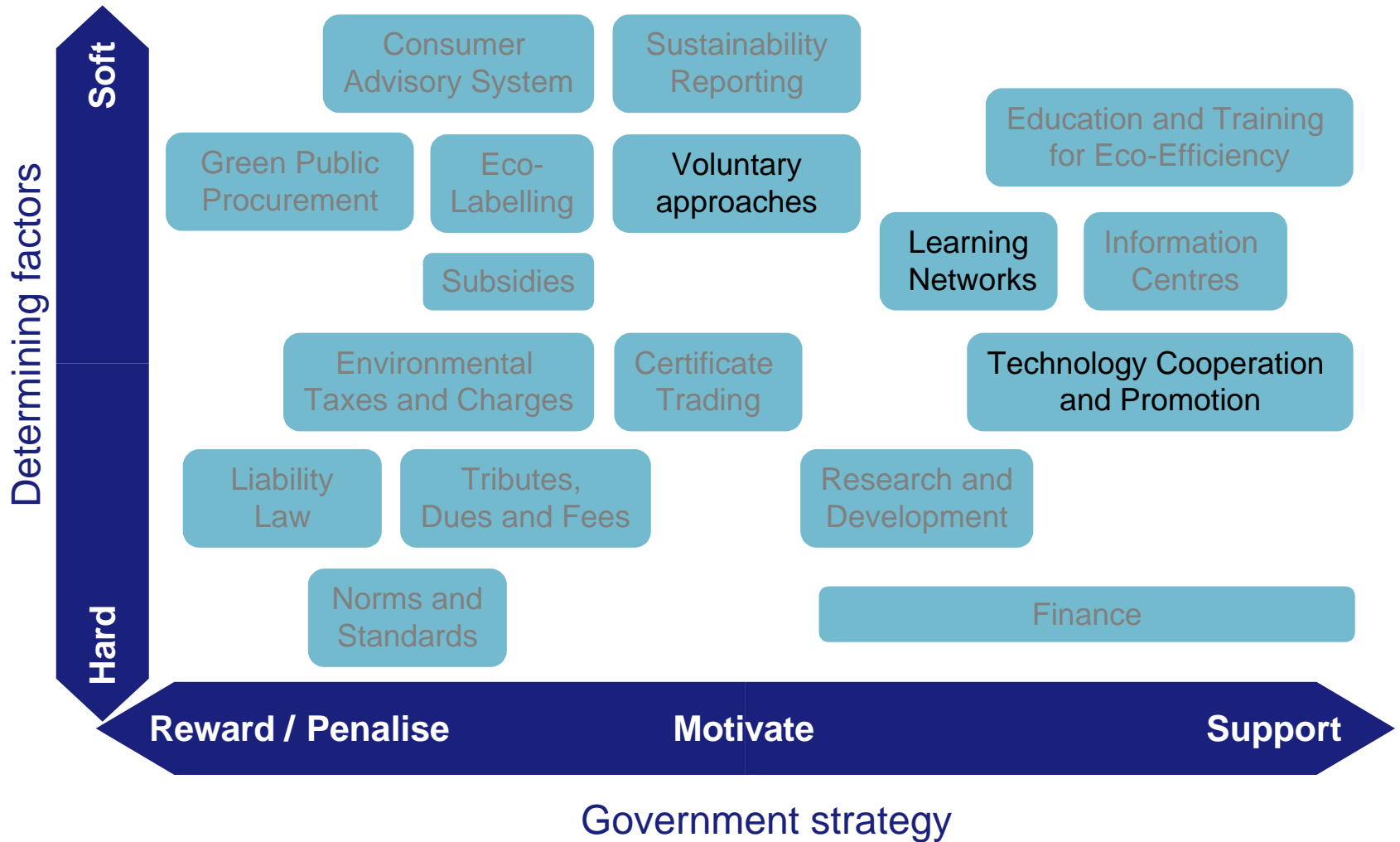
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# Bringing the pieces together

## SCP policy instruments in the matrix

# SCP policy instruments



# Typology

**Beyond traditional regulatory instruments and market-based instruments, government also has a wide range of cooperation instruments.**

**Voluntary  
Agreements**

**Learning  
networks**

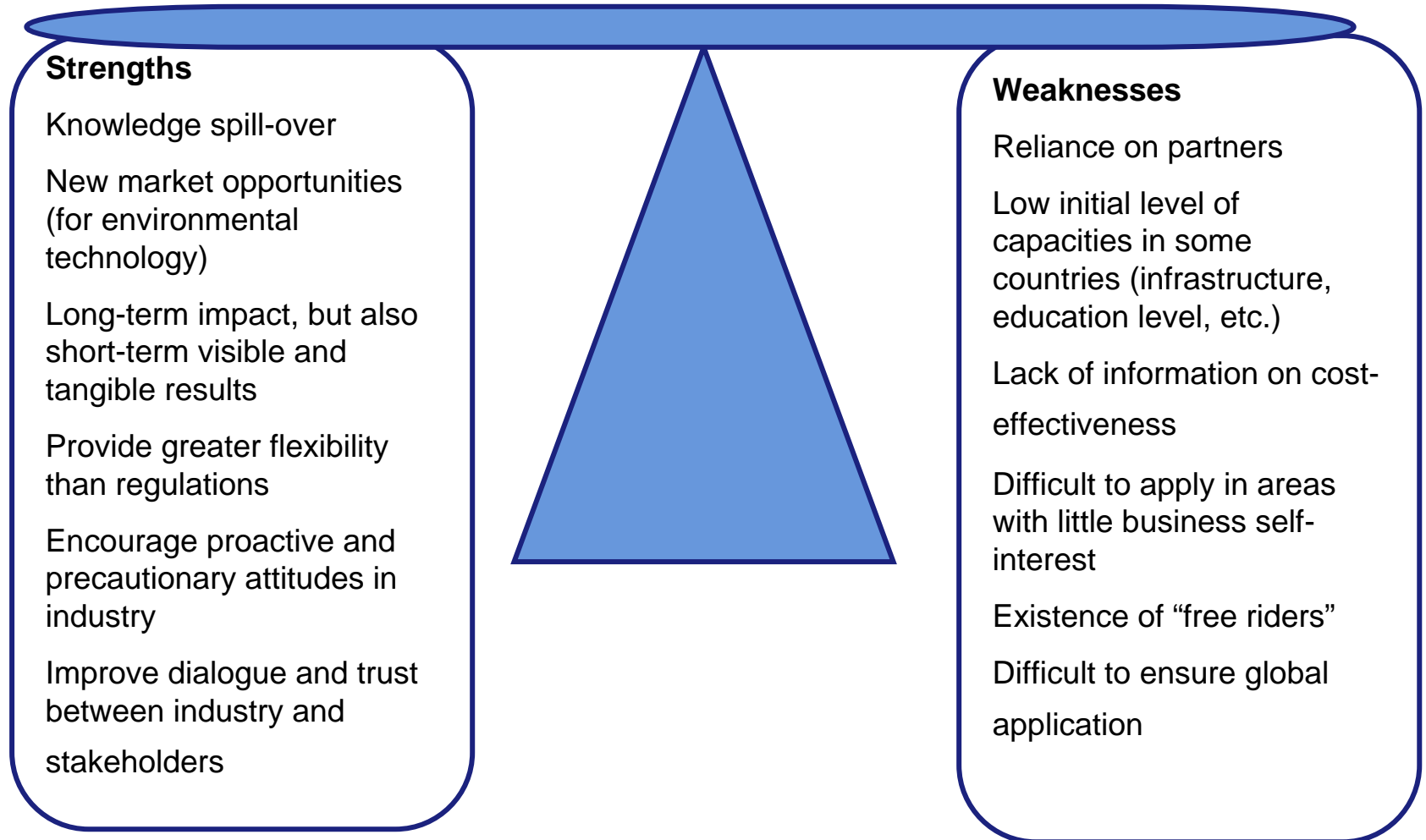
**Technology  
Cooperation**

**Capacity  
Building**

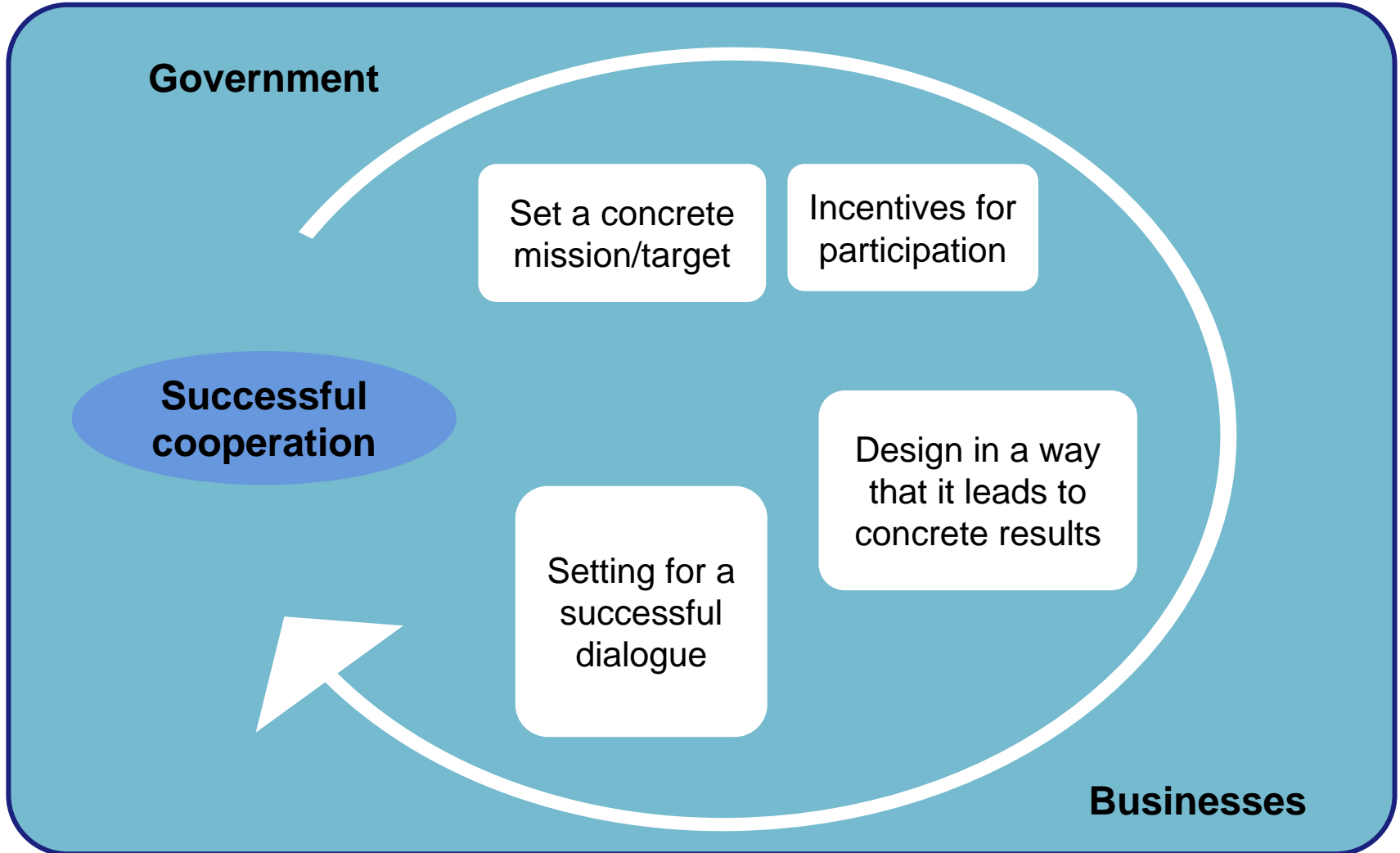
**Partnerships**

**North-South-South  
Cooperation**

# Strengths and Weaknesses



### Success Factors



# Policy Reinforcement for Circular Economy

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An overview of cooperation instruments

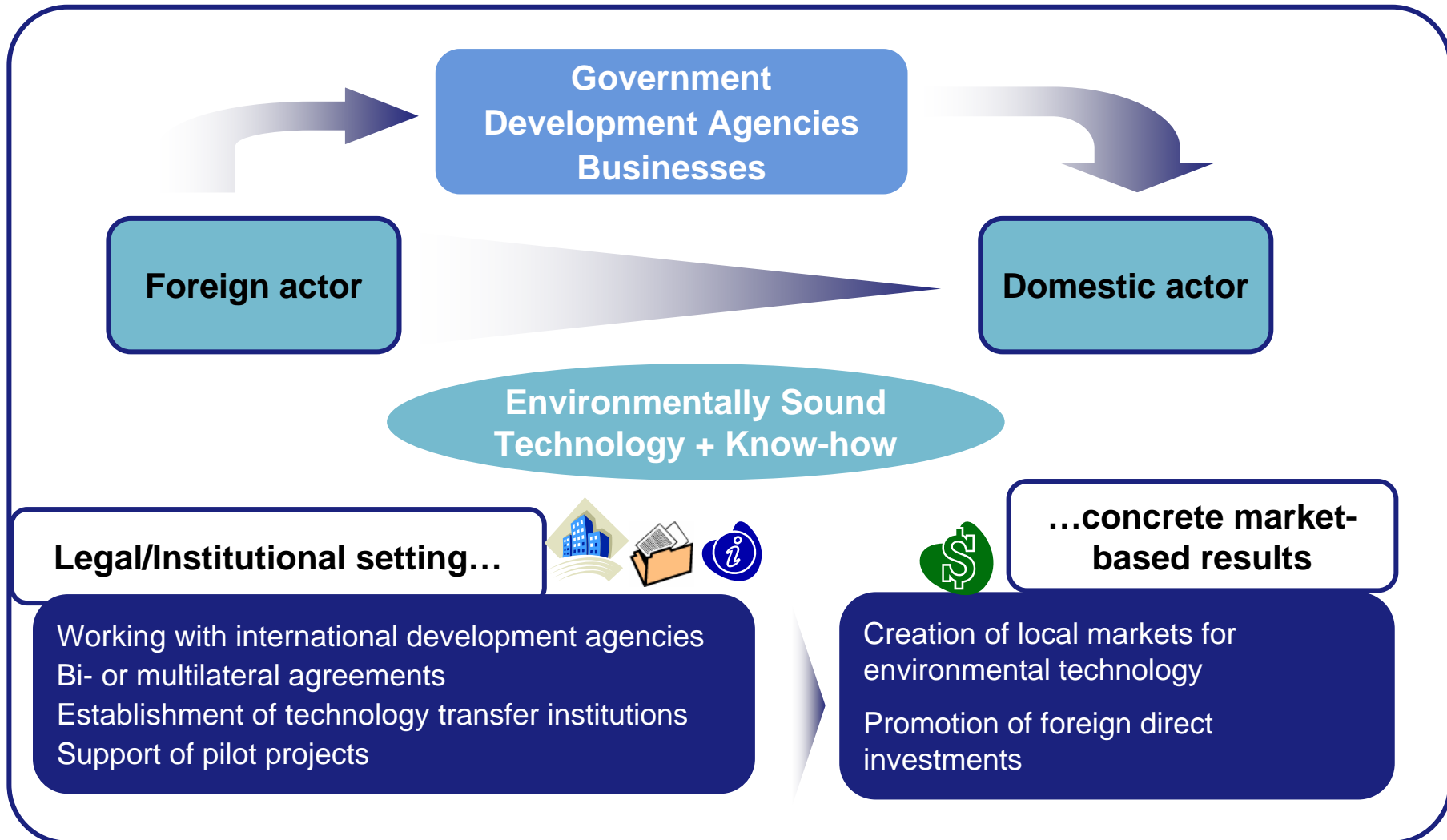
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Technology Transfer  
Voluntary Agreements

Cooperation instruments in focus

---

# Technology Transfer



# Cooperation instruments in focus

## Case study - HERA Programme: The Background

### GTZ's HERA Programme

#### Background

- Africa: fuelwood - The sole energy resource for 90% of households
- Alternatives: Not accessible, other sources are unaffordable
- Problems: Environmental, economic and health-related



#### HERA programme

#### Increasing use of energy-efficient stoves by:

- Identify measures and strategies for scaling up the use of stoves
- Further development and dissemination of strategies and concepts for basic energy supply



### HERA Programme

#### HERA



#### Results so far

- Support of the development of energy-efficient stoves
- 1 million stoves successfully produced and sold in the last 20 years
- Stoves: up to 80% of the biomass savings; produce virtually no smoke

#### Impacts

Economic

Socio-cultural

Health

Environmental



# Cooperation instruments in focus

## Case study: Effizienz-Agentur NRW, Germany- PIUS Check

### Effizienz Agentur NRW: PIUS Check



**The PIUS Check**

**The EFA Tool for Cleaner Production**

**Cooperation project between...**



**Industrial producer**

**+**

**Effizienz- Agentur NRW**



**...which both authorise...**

**Technical consulting  
company**



**...with the objective of performing a material flow analysis at  
the industrial company**

#### **Target group**

Companies < 500 employees

Max. 9 consulting days

#### **Financing**

EFA pays up to 70% (up to 4.500 €) or max. 500€ per day

The company pays 30%

# Cooperation instruments in focus

## Case study: EFA NRW, Germany- PIUS Check: How does it work?

### Effizienz Agentur NRW: PIUS Check



**4 steps toward significant improvement of resource efficiency**

#### 1.Step: Initial Meeting

Check relevance of Cleaner Production (e.g. technologies)

#### 2.Step: Macro - Analysis

Material flow analysis within company

Cooperation agreement

Intermediate follow up meeting to ensure project is on track

#### 4.Step: Concept Planning

Start program introduction with management

#### 3.Step: Micro - Analysis

Develop alternative manufacturing concepts



**after 6-9 Months EFA checks  
whether goals have been achieved**

# Cooperation instruments in focus

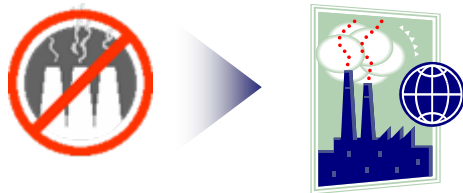
## Case study: EFA NRW, Germany- PIUS Check: Examples

### Effizienz Agentur NRW: PIUS Check



#### Examples of actions taken under PIUS

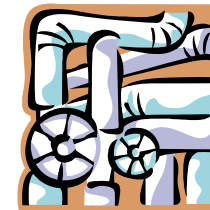
Substitutions of environmentally unfriendly auxiliary and industrial materials



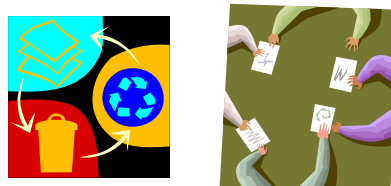
Application of efficient and innovative processes



Usage of energy saving potential (e.g. heating)



Internal circulation management of materials used



Ecological product creation



Usage of, as opposed to, sales of products (ecology leasing)



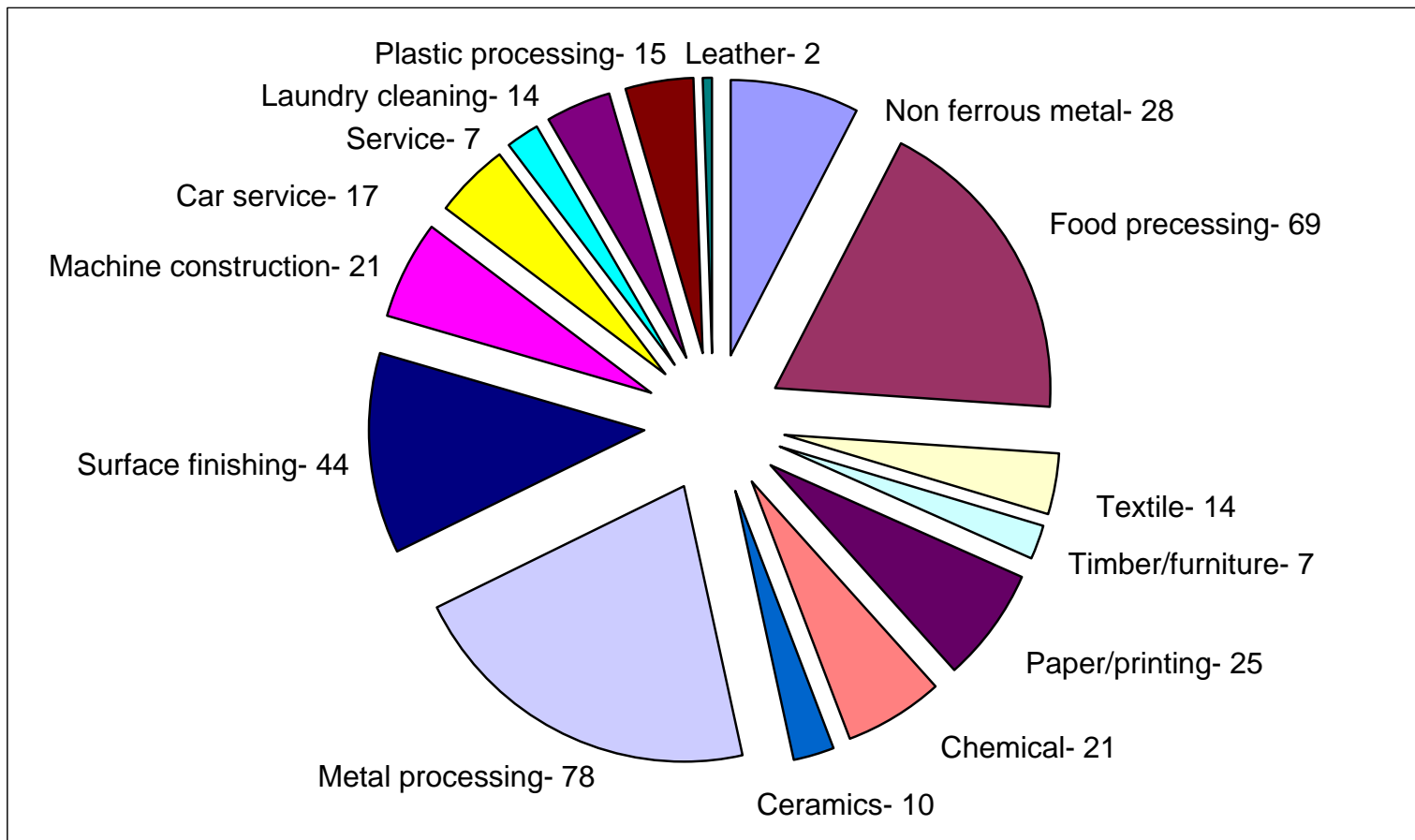
# Cooperation instruments in focus

## Case study: EFA NRW, Germany- PIUS Check: Who were the participants?

### Effizienz Agentur NRW: PIUS Check



Status quo PIUS Check, Industrial sectors,  
372 projects, January 2006



# Cooperation instruments in focus

Case study: EFA NRW, Germany- PIUS Check: Lessons learned

## Effizienz Agentur NRW: PIUS Check



	Previously implemented projects	Long-term total capacity of all projects (estimated)
Number	152	345
Investment	23.6 Million €	53.6 Million. €
Annual savings in the production processes	7.1 Million €	16.2 Million €
Annual savings of the resource water/waste water	806,281 m <sup>3</sup>	1.83 Million m <sup>3</sup>
Annual savings of the resource waste/hazardous waste	11,329 t	18,175 t
Annual savings of the resource energy	44.7 GWh	101.5 GWh

# Cooperation instruments in focus

## Case study: Effizienz-Agentur NRW, Germany- PIUS Check: Benefits

### Effizienz Agentur NRW: PIUS Check



#### Benefits

Increase of company's competitiveness



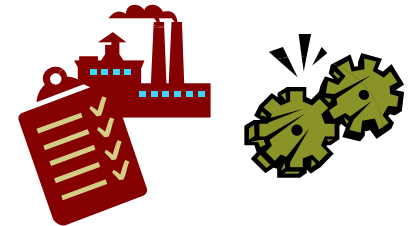
Cost reductions



More efficient usage of raw materials/energy



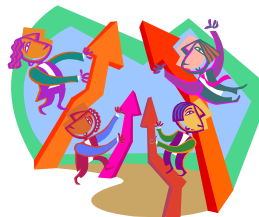
Optimization of operative processes



Improvements of environmental protection standards



Initiated continual improvement processes



Highly successful- 95% of all cases!



# Cooperation instruments in focus

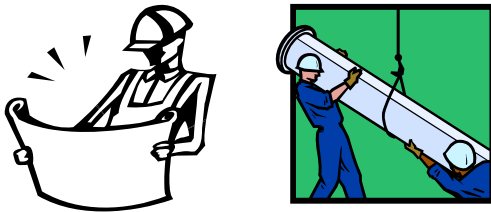
## Case study: Effizienz-Agentur NRW, Germany- PIUS Check: Challenges

### Effizienz Agentur NRW: PIUS Check

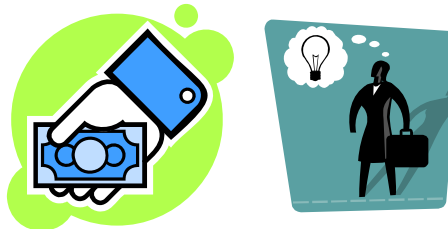


#### Challenges

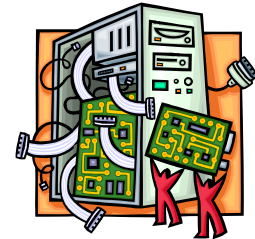
Simplify the implementation of innovative technology



New funding concepts



Maintenance of technology



**GOAL**

Implement resource efficiency considerations in all company strategies!

# Cooperation instruments in focus

## Case study: Effizienz-Agentur NRW, Germany- PIUS Check: Replicability

### Effizienz Agentur NRW: PIUS Check



#### Replicability/implications for other countries/regions

Demonstrate the benefits



Awaken the entrepreneurial ambition



Show success stories



Replicated in other German states and piloted in Japan



Interest shown in England, Switzerland and China





# Voluntary Agreements

## Objectives / Target groups

Improve companies' environmental conduct and performance beyond existing legislation and regulations.

## Typology by the level of institutionalisation

Unilateral commitments made by industry



Agreements between industry and public authorities



Voluntary agreement schemes set up by public authorities



### Clean Production Commitments (APLs) in Chile

#### Characteristics / Target groups

**Objective:** to motivate enterprises in different sectors to institute internal environmental protection measures and to improve the use of resources

**Legal character:** voluntary; no legal basis in many cases

Ministry of Economy

#### National Council for Clean Production

- The state
- Industry associations
- Trade unions



Financial incentives

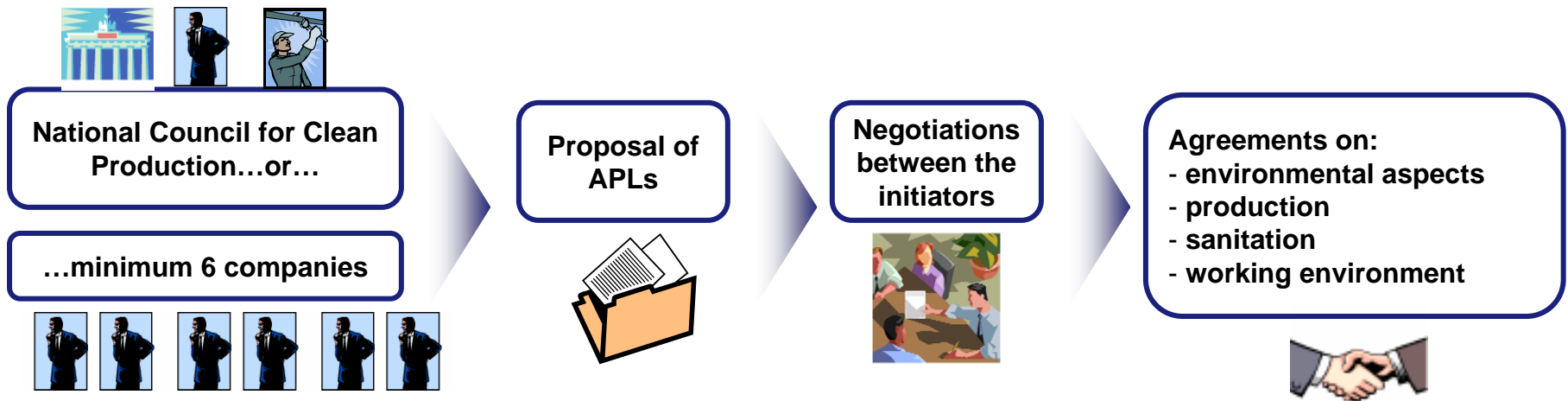


- Fund for promoting advisory services
- Fund for enhancing management capacities for implementing the commitments
- Special environmental credit line to promote investment

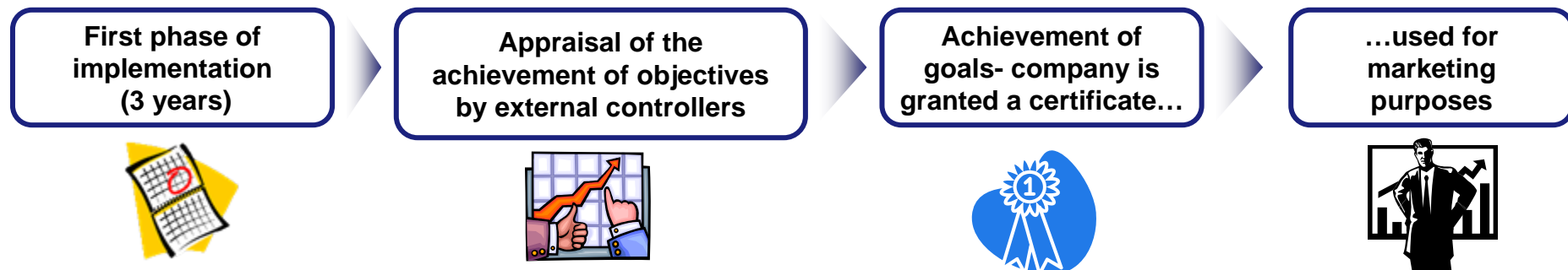
Businesses and Associations

### Clean Production Commitments in Chile

#### Formulation



#### Implementation



### Clean Production Commitments in Chile

#### Positive results

Integral part of the government's economic promotion policy

Rising number of industry sectors and companies taking part (>4,000 firms signed the APLs)

Implementation of an APL prepares later certification under ISO 14001

APLs are voluntary and therefore easier to persuade participation



#### Challenges

Pressure from industry to set up standards that are favourable to them

No legal sanctions for non-compliance

No representatives from scientific experts and civil society in the National Council for Clean Production

No additional state incentives  
e.g. favouring APL-certified companies in public procurement

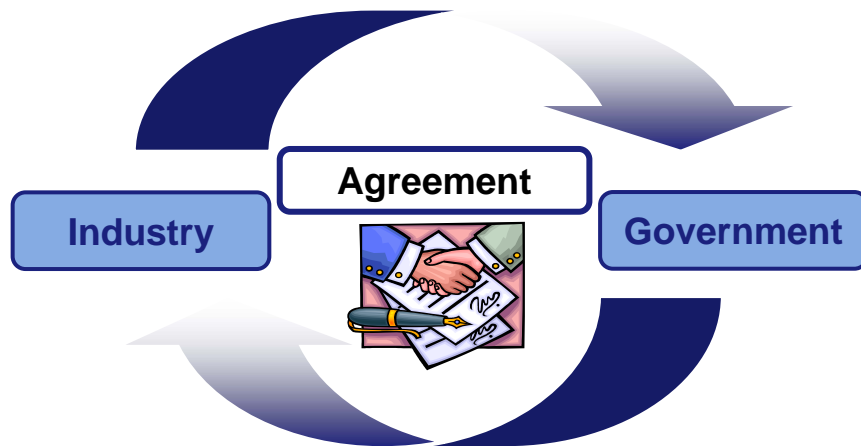


## Presentation by SEPA

# Netherlands Benchmarking Covenant

### Legal development

- Established in mid-1999
- First evaluation- 2004
- Intermediate targets- 2005/2008
- Target year- 2012



### Main characteristics

- Agreement between government and industry: a covenant
- Goal: “world’s top” (best international standard) on energy efficiency as a moving (improving) target
- Point of reference: international benchmark
- Target group: energy intensive industry (> 0.5 Pj/y)
- Rationale: no point in using heavy restrictive measures if it leads to firms leaving Netherlands
- Benefit: environmental and economic gains (reducing CO2 emissions)

# Netherlands Benchmarking Covenant

### Federal ministries

The Ministry of Economic Affairs



The Ministry of Housing, Spatial Planning and the Environment (VROM)



### Local/Regional governments

The Inter-Provincial Consultative Forum (IPO)



### Industry

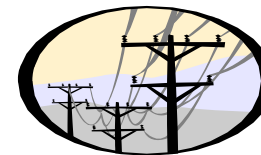
VNO-NCW Confederation of Netherlands Industry and Employers



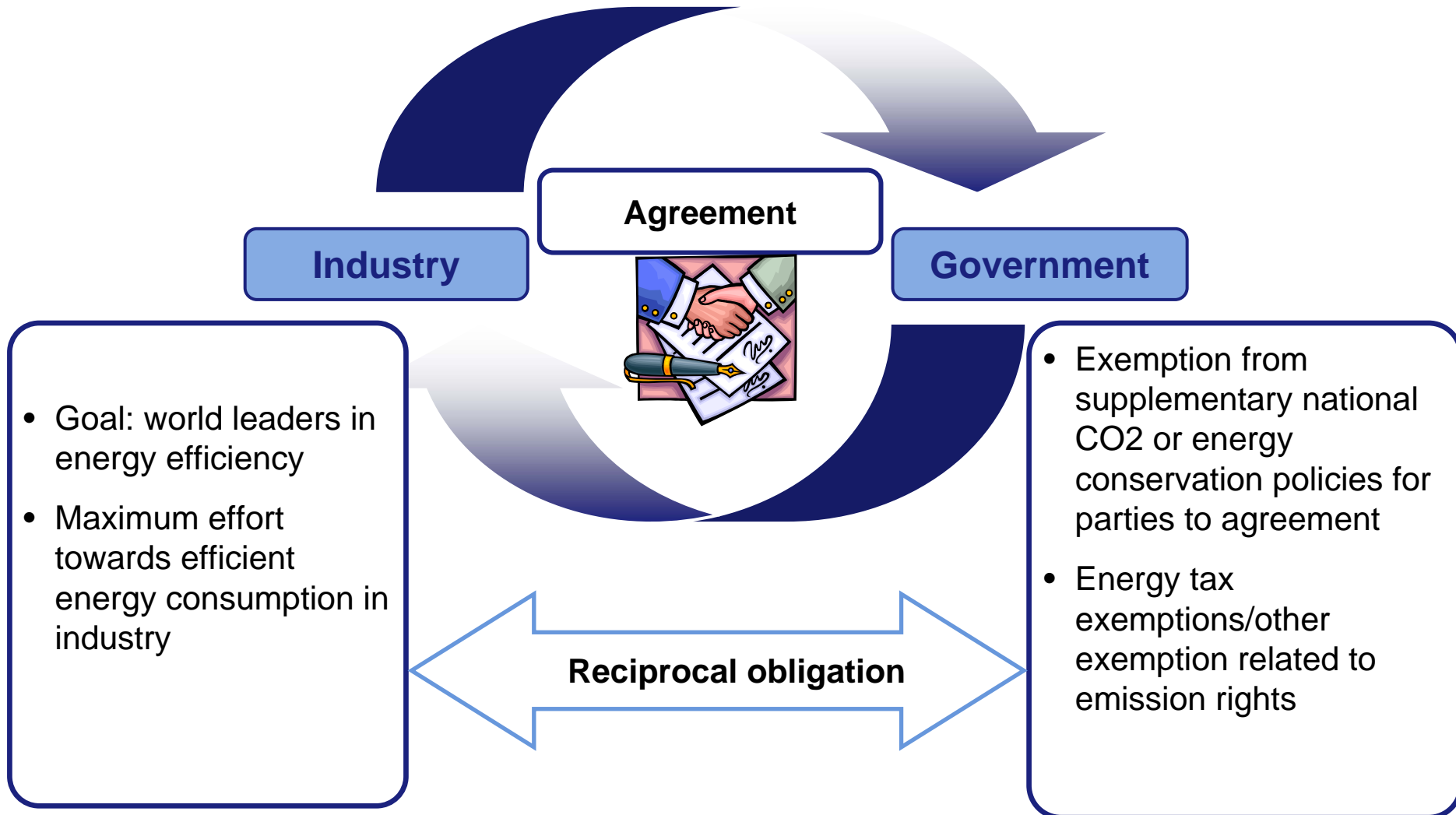
Sectoral organisations



Electricity production sector



# Netherlands Benchmarking Covenant





### Netherlands Benchmarking Covenant

#### Supervision

##### Benchmarking Committee

System implementation  
Report to government

#### Monitoring

##### Benchmarking Verification Bureau

Confirm benchmarks of industry  
Advice on benchmarks to industry and government

Industry

+

Consultant

International benchmark on energy efficiency

Revision every 4 years

2012: target year

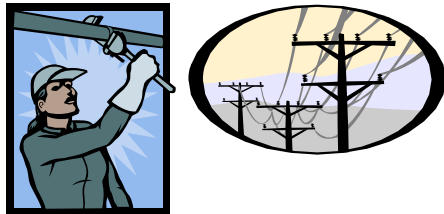
#### Energy Efficiency Plan

- How and when the energy efficiency goal will be reached/Rate of investment
- Begin with cost-effective measures- then less cost-effective
- If world leading standard not reached by 2008- flexible instruments permitted (emission trading)
- Evaluated and approved by government authorities and reviewed every 4 years

# Netherlands Benchmarking Covenant

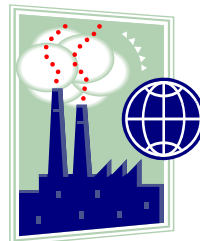
### Number and character of companies

103 companies - industry + electricity generating sector (1060 PJ/y)



### Number of plants involved

232



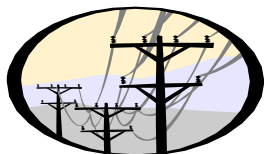
### Percentage of eligible companies in industrial sector that entered into covenant

94%



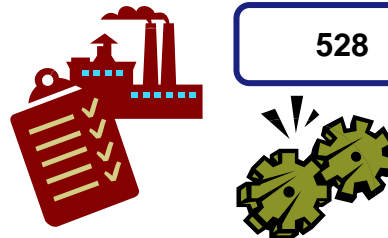
### Percentage of eligible companies in electricity generating sector

100%



### Number of processes involved

528



### Number of consultants involved

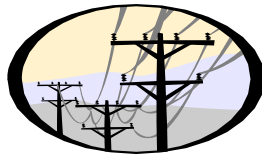
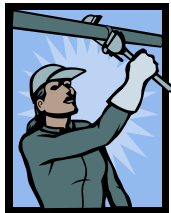
49



# Netherlands Benchmarking Covenant

### Positive results

Significant appeal for industry



Simplified reporting



Based on international 'best-practice'



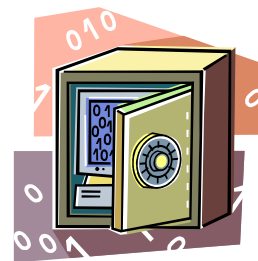
Establishing a moving standard based on best international practice



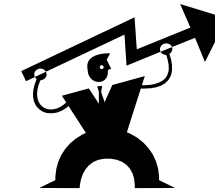
Stimulus for continuous improvement



Support from industry



Level playing field for industry



# Netherlands Benchmarking Covenant

## Challenges

**Intensive process to establish benchmarks and energy efficiency plans**



**Need to carefully consider transparency and confidentiality needs**



**Need for independent holder of benchmarking information**



**Benchmarks should exceed requirements of EU IPPC Directive**



**Disappointing energy savings: approx. 5%**



**Need for evaluation of transaction costs**



# Policy Reinforcement for Circular Economy

**Thank you for your attention !!!**



# Promote4

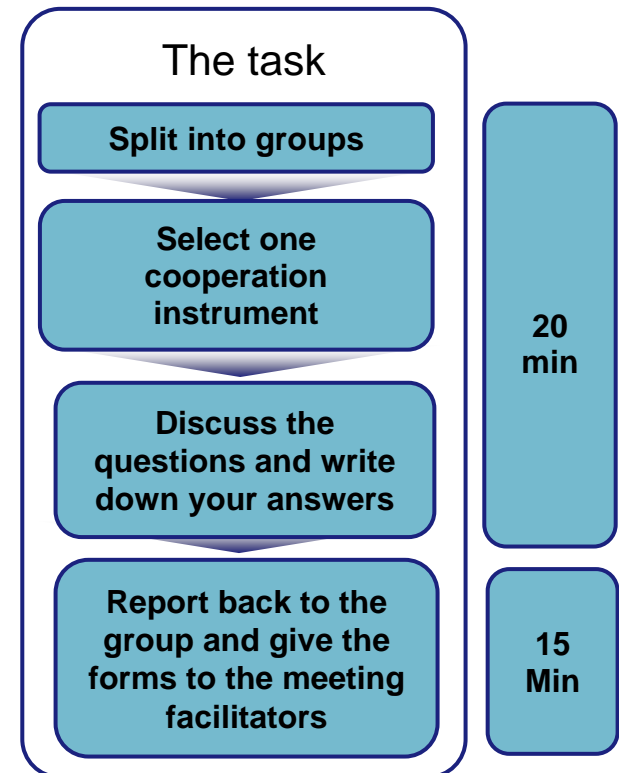
Group Exercise: Cooperation Instruments

# Group Exercise

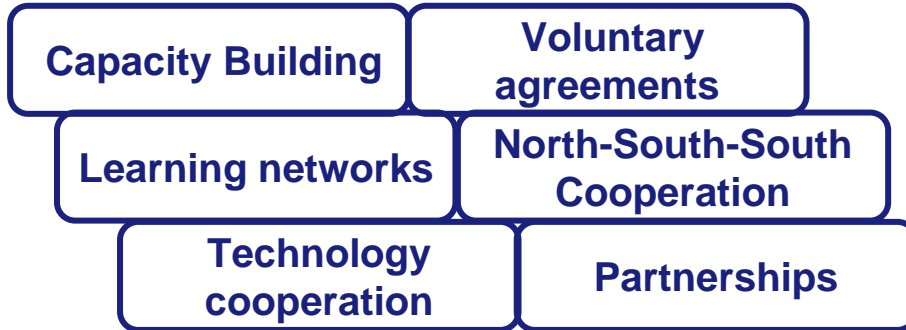
## Cooperation Instruments

1. Split into four groups with participants from different departments.
2. Select one of the presented cooperation opportunities.
3. Answer the questions on the forms and report back to the meeting.

### What do we do?

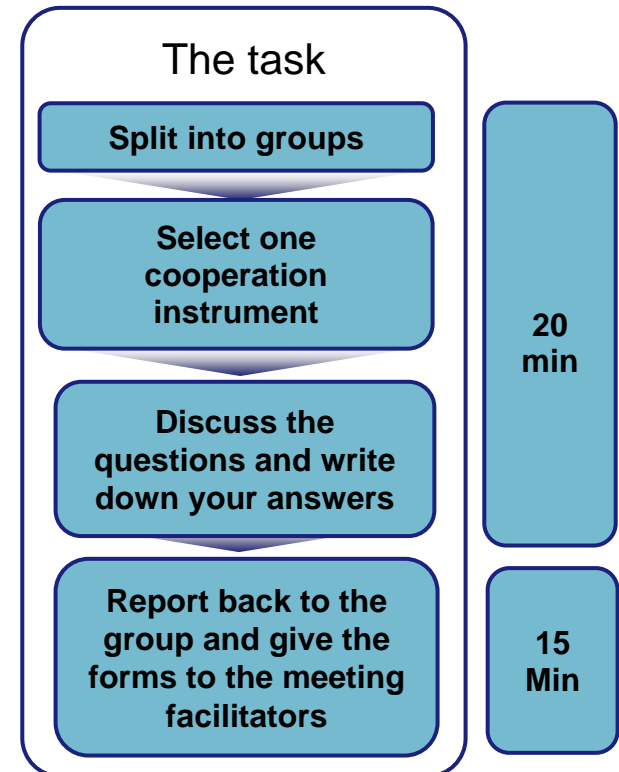


# Group Exercise



1. **Select one of the cooperation instruments above with the best chances of success in China or your region. Why is this the best instrument?**
2. **What needs to be done to introduce the selected cooperation instrument in China or your region?**
3. **Which individuals and organisations need to be involved?**
4. **Which individuals and organisations have the best opportunity to take the lead?**

### What do we do?

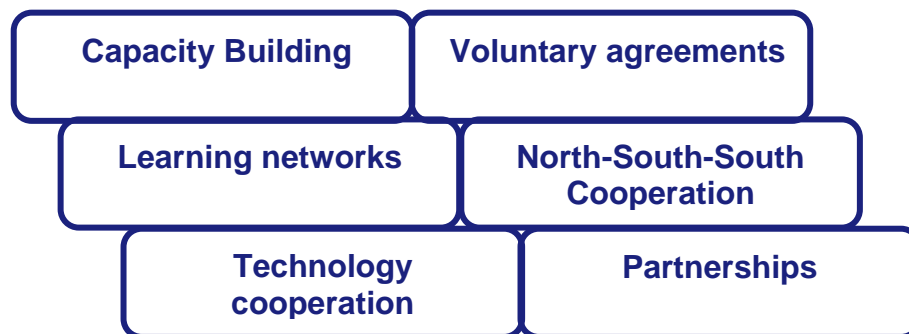




# Group Discussion

Promote4

## Cooperation instruments



- 1. Circle one of the cooperation instruments above with the best chances of success in China or your region. Why is this the best instrument?**
  
  
  
  
  
  
  
  
  
  
- 2. What needs to be done to introduce the selected cooperation instrument in China or your region?**

Report back in 20  
Minutes

# Group Discussion

**3. Which individuals and organisations need to be involved?**

**4. Which individuals and organisations have the best opportunity to take the lead?**

**5. Who should make an action plan?**

**When completed each group presents its plan for a introducing a cooperation instrument**

**Report back in 20  
Minutes**



# Promote5

**Educational and Research Instruments:  
Educating and Creating Awareness**

# Policy Reinforcement for Circular Economy

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An overview of  
educational and research  
instruments

An overview of  
educational and research  
instruments

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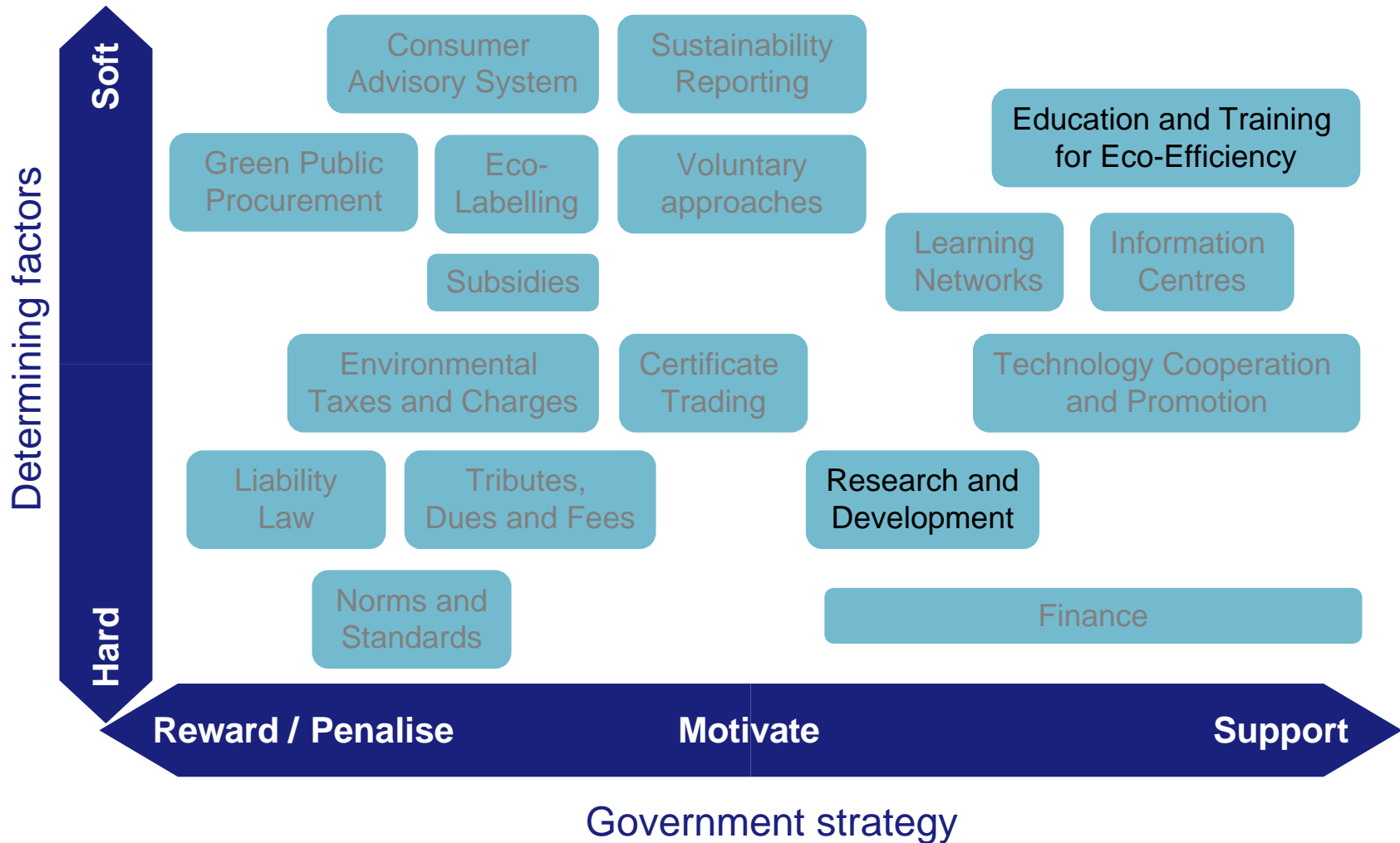
Educational and research  
instruments in focus

---

# Bringing the pieces together

## SCP policy instruments in the matrix

# SCP policy instruments



### Definition

Educational and research instruments present a further group of soft policy instruments. At the production level, they aim at creating innovative, less resource-intensive products and services. At the consumption level, they strive for behavioural changes in the public. The main instruments within that group are:

Vocational training and qualifications

Applied research

Industrial Research

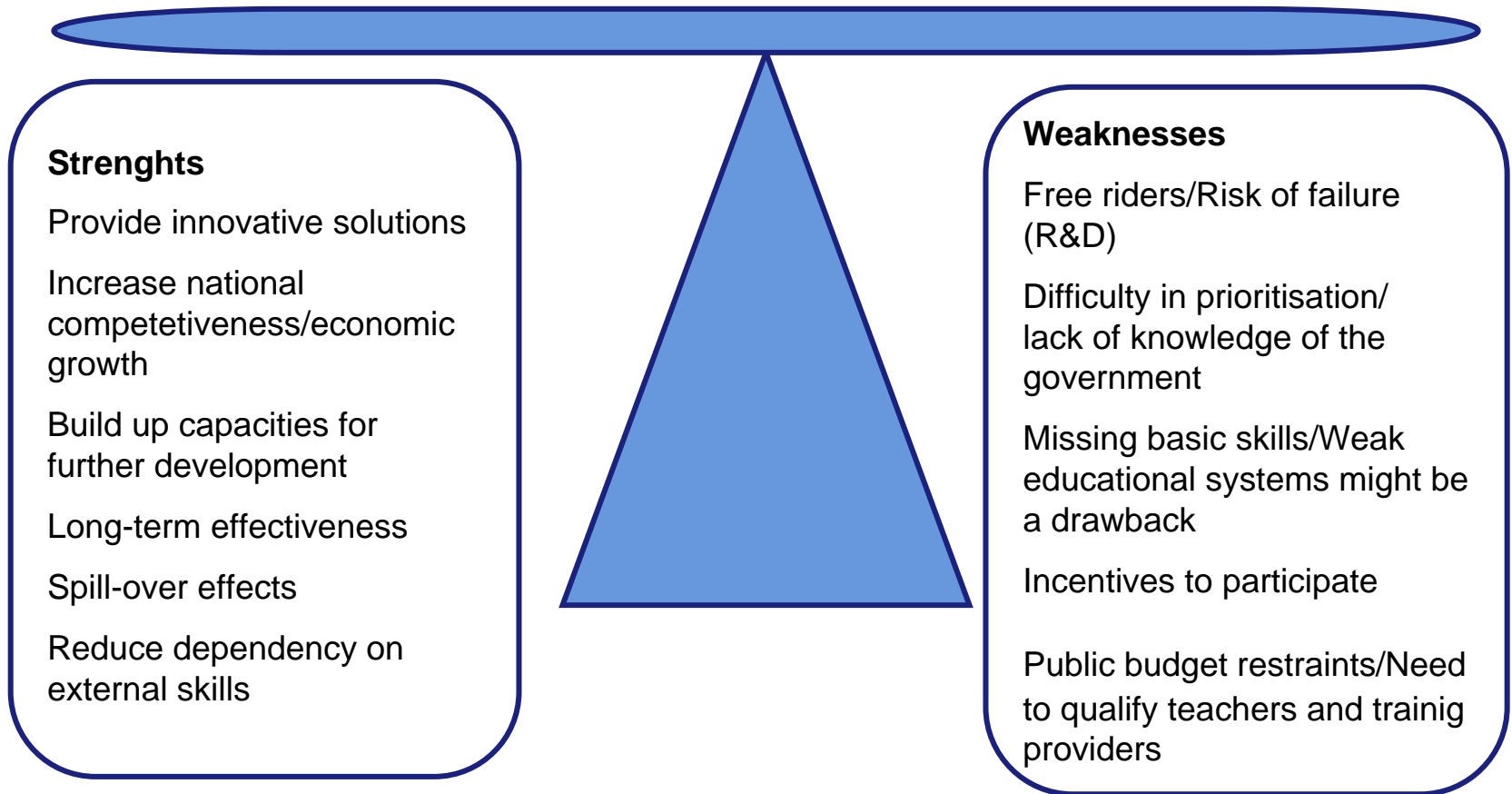
Consumer Education

### Objective

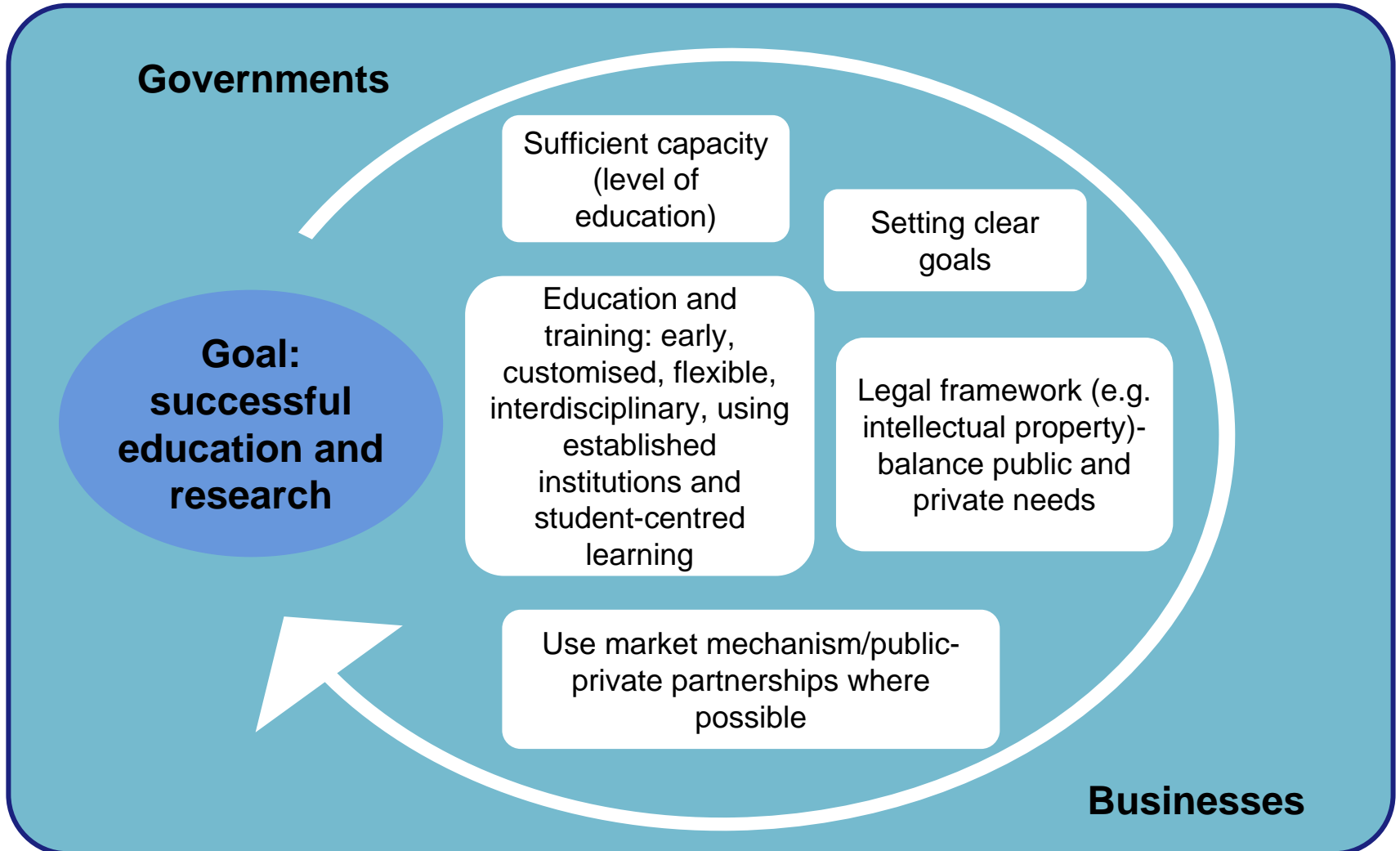
Creation of innovative technologies (products/services) that spur the economical growth and bring more employment while lessening the environmental and social impacts

Capacity building/awareness raising within society towards environmental protection and efficient use of energy/circular economy

# Strengths and Weaknesses



# Success Factors





# Policy Reinforcement for Circular Economy

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Educational and research  
instruments in focus

---

An overview of educational  
and research instruments

---

Educational and research  
instruments in focus

---

# Overview

Research and Development

Education and Training for Resource  
Efficiency

# Research and Development

### Definition

**Research and development (R&D): “systematic investigatory work carried out to increase the stock of knowledge and the use of such knowledge to devise new products and processes”**

### Characteristics/Actors involved

#### Forms of R&D

**Basic Research**

**Applied Research**

**Experimental Development**

#### Actors

**Governmental Departments**

**Universities**

**Research Institutes**

**Non-governmental research bodies**

### Goals

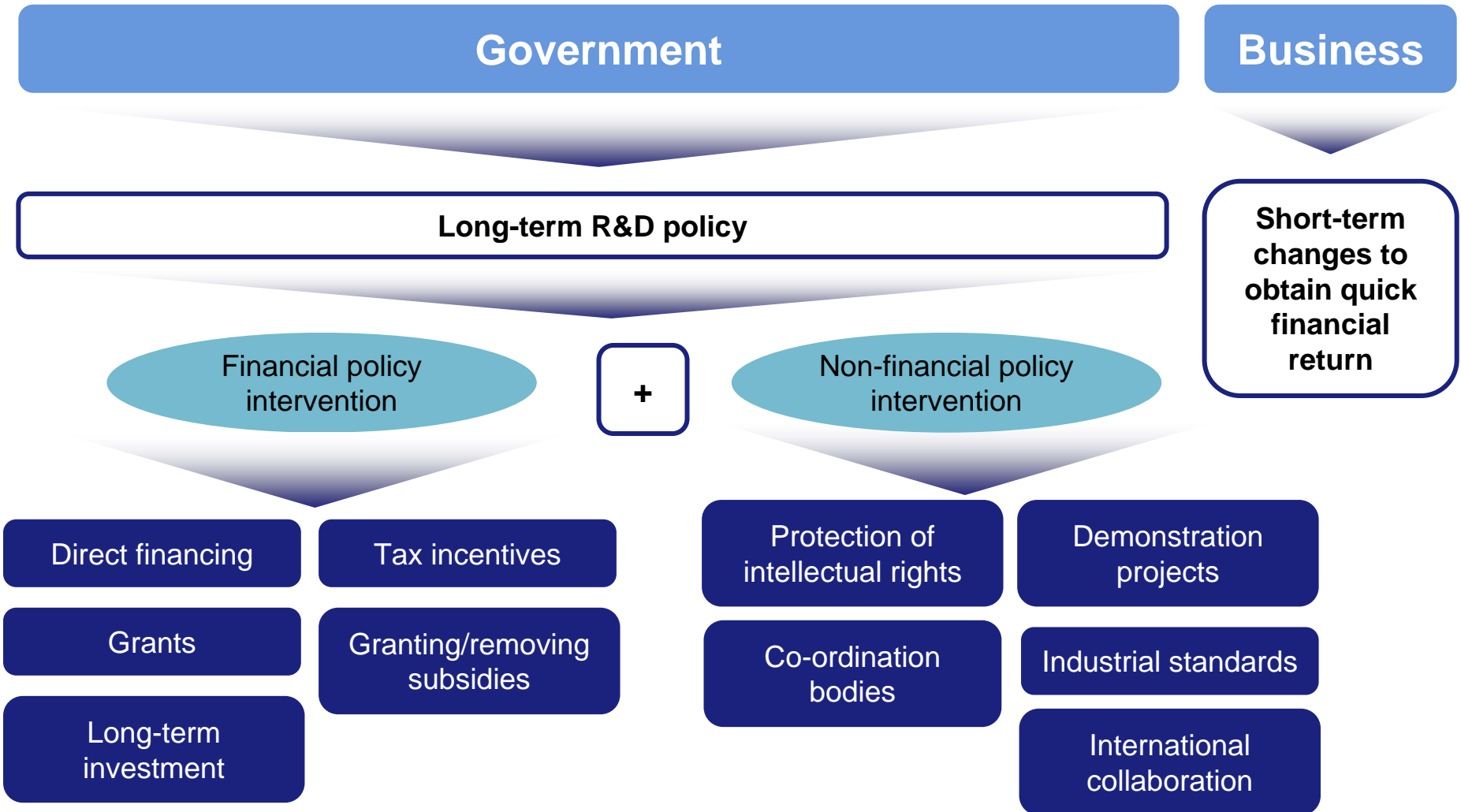
**Raising productivity and competitiveness of companies...**

**...and creating more employment...**

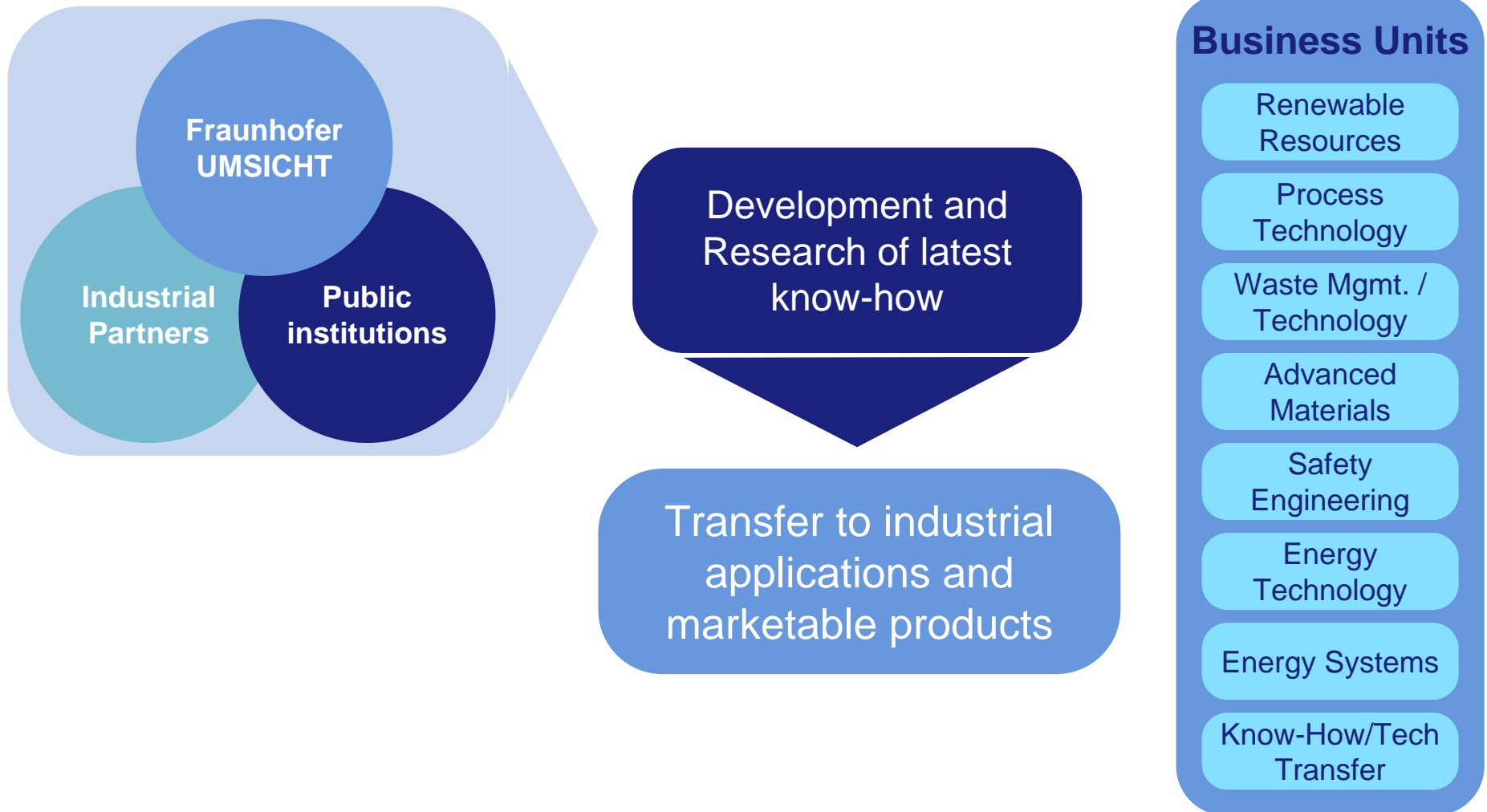
**...by producing new products and improving production processes**

**Innovate new ways to deliver products and services in a less resource-consuming manner**

# Research and Development



# Fraunhofer UMSICHT Institute



## Presentation by SEPA

# Education and Training

## Characteristics

Education and training for resource efficiency aims to build capacity among people on resource efficiency by re-directing education and training programs

## Goals

Develop an understanding of a range of environmental and eco-efficiency concepts

Encourage reflection on the effects of personal values and lifestyle choice

Promote skills, concepts, methods and approaches for critical thinking and practical, effective action

## Targeted stages of education

Primary/Secondary schooling



Technical and vocational training (TVET)



Higher Education



Life-long/on the job



# Education and Training

## Government

	Specialisation	Integration	Mainstreaming
Key features	Creation of special careers	Intergration into standard curricula	Intergration into different curricula
Scope	Small-only a fraction of people	Middle-dependng on the courses	High-reaches all students
Benefits	Generates experts with in-depth knowledge	Generates experts with ,traditional' background	Resource efficiency gets linked to core career issues



# Education and Training

Ministry of Education, Research  
and Culture, Sweden

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt.  
benötigt.

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt.  
benötigt.

### Wide spread

Environmental courses and environmental programs can be studied more or less at all universities and colleges

### Flexibility

Different ways and various combinations of courses within and beyond education programs at basic level as well as at under-graduate and postgraduate levels

### Voluntary services

Considerable part of this education takes place outside upper-secondary schools and higher education institutes

### In-depth knowledge/a vailability

Several programs focus on pure environmental and ecology issue/A wide range of courses and teaching material produced for organizations' environmental certification work

# Sustainable Development in Handwork Trades

What is it?

Vocational sustainability training programme in the trades sector

What is the goal?

To raise the awareness of sustainable development and resource efficiency issues among tradespeople

What is the rationale?

Vocational sustainability training

Reducing internal costs

+

Development of sustainable business areas

=

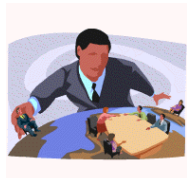
Long term competitiveness and environmental sustainability



### Sustainable Development in Handwork Trades

#### Who gets trained?

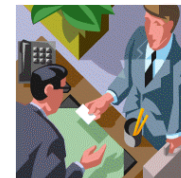
Managers of SMEs



Teachers and vocational trainers in companies



Consultants



Individual tradespeople



#### Who established the program?

Operating institution



West German Chamber of Trades

Scientific cooperation



Wuppertal Institute for Climate, Environment and Energy



Klaus Novy Institute

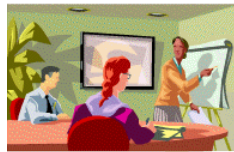
# Sustainable Development in Handwork Trades

How to develop a vocational training program for sustainability?

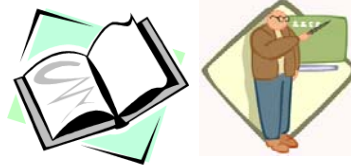
Pilot programme  
with companies



Industry wide  
results



Development of the  
training program



Broader training  
via media-packet



How to integrate the training into trades businesses?

Qualification and consultancy

Step 1

Introduce  
tradespeople to  
sustainability

Step 2

Review the  
business

Step 3

Determine the strenghts  
and oppourtunities/  
measures for  
improvement

Step 4

Teach the  
tradespeople

Step 5

Control and  
improve

## Presentation by SEPA

# Policy Reinforcement for Circular Economy

**Thank you for your attention !!!**



# Promote5

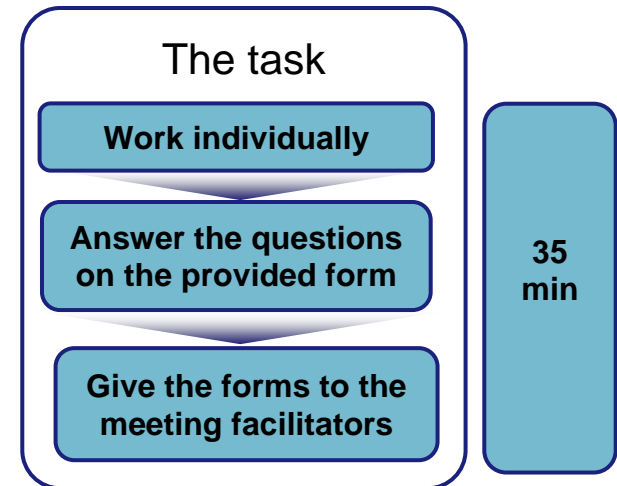
Individual Exercise: Education and research

# Individual Exercise

## Education and research

1. **Work individually.**
2. **Consider which groups inside and outside the municipal/local government authorities are important for Circular Economy education.**
3. **You may discuss the questions in small groups or with the facilitators.**
4. **When finished return the forms to the meeting facilitators.**

### What do we do?





# Individual work exercise

Promote5  
Education and research

Return the  
completed forms in  
35 Minutes

What groups or organisations **within** the municipal/local government authorities are the most important for educating about the Circular Economy?

- 1. To enhance CE opportunities at the enterprise level
- 2. To enhance CE opportunities at the sector or industrial park level
- 3. To enhance CE opportunities at the society level

- 1. Enterprise level
- 2. Sector or industrial park level
- 3. Society-wide level

Why are these groups especially important for education about the Circular Economy?



# Individual work exercise

Promote5

Education and research

What groups or organisations **outside** the municipal/local government authorities are most important for educating about the Circular Economy? These could be specific industrial sectors or certain groups in society such as young people.

Return the completed forms in 35 Minutes

1. To enhance CE opportunities at the enterprise level
2. To enhance CE opportunities at the sector or industrial park level
3. To enhance CE opportunities at the society level

1. Enterprise level
2. Sector or industrial park level
3. Society-wide level

Why are these groups especially important for education about the Circular Economy?

# Promote6

Information Instruments:  
Providing targetted information

# Policy Reinforcement for Circular Economy

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An overview of  
information instruments

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An overview of  
information instruments

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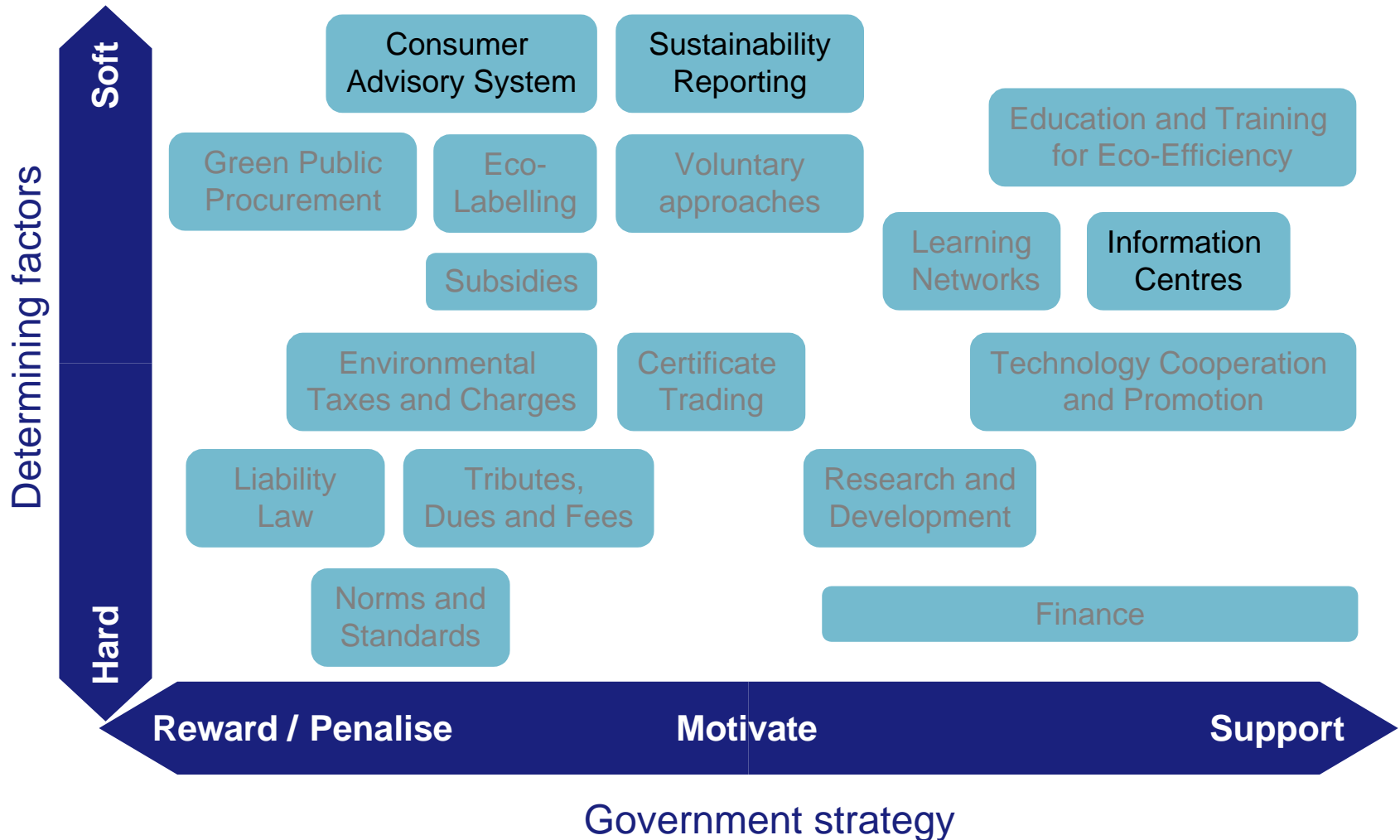
Information  
instruments in focus

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# Bringing the pieces together

## SCP policy instruments in the matrix

# SCP policy instruments



## Definition

“Information instruments are environmental policy tools that seek to influence the behaviour of firms and individuals by providing information.”

Build knowledge & capacity



Influence behaviour

# Objectives

Build knowledge & capacity

Influence behaviour

Typology

Labeling for goods and services

Training

Information centres

Knowledge exchange centres

Public information & education

Technology cooperation/transfer

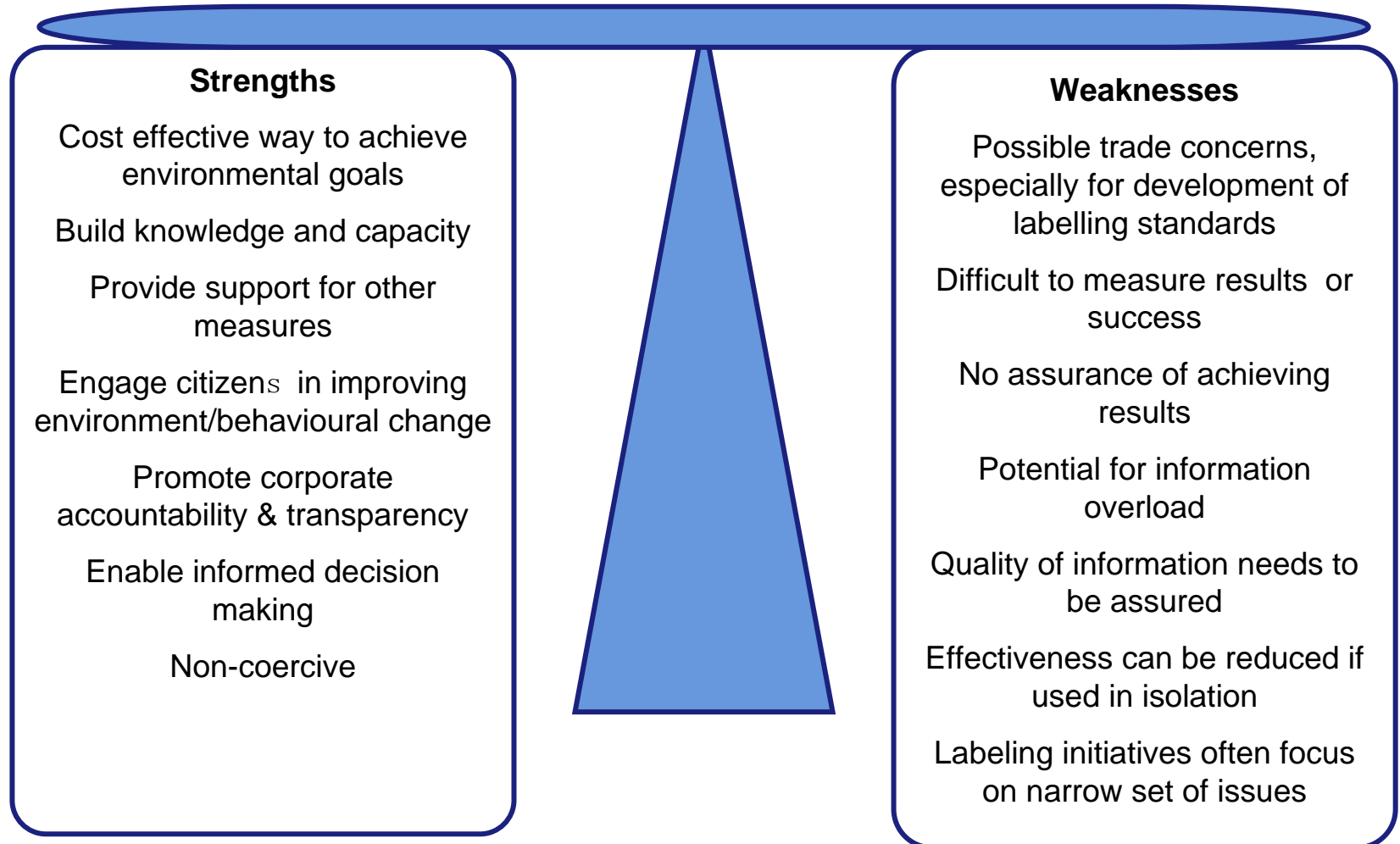
Awards & recognition

Pollutant release registers

Public reporting

Non-compliance reporting

# Strength and Weaknesses





# Success Factors

**Goal:** improved knowledge and behaviour change by producers and consumers

Effective when a lack of information about how to reduce impacts is a significant barrier

Need to provide the right information in the right way, at the right time to the right people

Important as critical support for other instruments



The environment is important but what can somebody like me do?

How can I tell which products are best?

The rules are changing so fast. Where can I get help?

# Policy Reinforcement for Circular Economy

.....  
An overview of  
information instruments  
.....

.....  
Information  
instruments in focus

Information  
instruments in focus  
.....

# Overview

## Labeling for goods and services

Enabling purchasers to make sustainable decisions

## Information for industry

Supporting sustainable behaviour

## Information for consumers

Protecting consumers and changing behaviour

## Public reporting & awards

Informing citizens, community leaders and officials

# Labeling for goods and services

## Enabling purchasers to make sustainable decisions

Build knowledge and capacity

Types of labels

**Type I**  
Independent  
certification

**Type II**  
Self  
declaration

**Type III**  
Quantified  
information

Purpose  
or example

Eco-labels  
Organic food labels  
Fair Trade labels  
Used to to inform  
purchasers

Uncertified statement  
on product or package  
often for single issue

Independently certified  
technical data &  
information. Often used  
for business procurement  
purposes

# Eco-Labeling for Goods and Services European Union

### The EU Eco Label “Flower” is.....

...A simple guide for consumers to make environmentally sound purchasing decisions

... 23 product categories covering twelve major areas of manufacturing and one service activity

...awarded to services and goods alike, but food and medicine are excluded

...only awarded to products that comply with strict ecological and performance criteria



Encourages business to market “greener products”



Promotes cleaner production and consumption

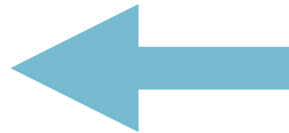
When a product is approved the flower can be placed anywhere on the product

Criteria take into account the overall life cycle (production to disposal)

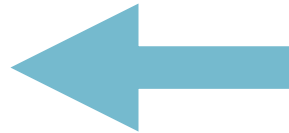


[www.eco-label.com](http://www.eco-label.com)

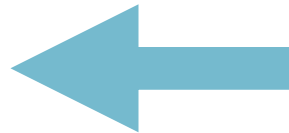
# Energy Labeling European Union



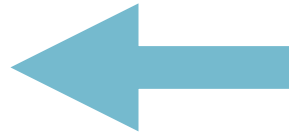
**Producer & product  
model information**



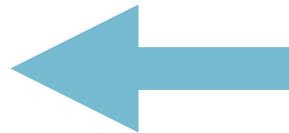
**Products rated from  
A (most efficient) to  
G (least efficient)**



**How much the  
appliance costs to run  
under standard  
conditions**



**Performance features  
of the appliance**



**Noise level under  
operation (optional)**

QuickTime?and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

**By law, the label  
must be shown  
on the following  
appliances:**

- refrigeration
- laundry
- dishwashers
- electric ovens
- lightbulbs
- air conditioners.

### Information centres Supporting sustainable behaviour

Build knowledge and capacity

Information centres provide information on eco-efficient production techniques. The main target group is industry, employees, government officials and consultants.

On-site visits & audits

Training & conferences

Reference publications & newsletters

Information clearinghouse

Information helpline/advice

Information sharing & collaboration

Technology cooperation

Demonstration projects

Technology transfer

SME Focus

There is often a special focus on SMEs which can lack access to information on improving technological competence.

# Information instruments in focus

## Case study: Cleaner Production Centre in China

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## What is the CNCPC?

CNCP was created by SEPA within the Chinese Research Academy of Environmental Sciences in Beijing with assistance from the UNEP/UNIDO

National Cleaner  
Production Network

Training

Cleaner Production  
Newsletter

CP Case studies

Cleaner Production  
Manuals, Guidelines

Demonstration  
projects

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[www.chinacp.com/eng/cporg/cporg\\_cncpc.html](http://www.chinacp.com/eng/cporg/cporg_cncpc.html)



# Information instruments in focus

## Case study: Cleaner Production Centre in India: Energy Management

### National Productivity and Cleaner Production in India

**The NCPC India is part of the National Productivity Council India (NPC), selling services to make India more competitive**

**Cleaner Production is closely linked to higher productivity**

**Clients of the NPC...**

...are ministries and industrial sectors alike

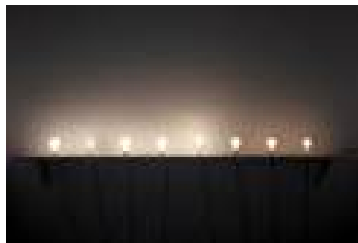
#### Topics:

The NPC covers a wide range of topics, from energy management to Information technology

**Energy Management...**

...consists of a mixture of:  
technology upgradation and application of alternative energy sources

...is for example: Waste heat recovery, Energy monitoring systems, electric energy audits



# Information instruments in focus

## Case study: Material Exchange in Canada- RCBC Mex

### The Recycling Council of British Columbia Materials Exchange

#### RCBC: main characteristics

- A multi-sectoral, non-profit organization working towards waste recycling and prevention
- Canada's oldest recycling council (est. 1974)
- Promote waste management solutions by conducting research, facilitating the exchange of ideas, and providing information services
- 150,000 inquiries a year from individuals and businesses and media
- Participate as stakeholder in policy discussions
- Financial support from industry, government and individuals

#### The RCBC's Material Exchange

**The Materials Exchange is a free waste matching service to help businesses and individuals find solutions to dispose:**

- Industrial by-products and chemicals
- Construction materials
- Paints
- Household waste like fridges
- Waste computers

**Goal: To encourage the transfer of reusable "waste" goods between generators and users**



# Information instruments in focus

Case study: Material Exchange in Canada- RCBC Mex: Institutional layout

## The Recycling Council of British Columbia Materials Exchange

### Financial Support and Funding

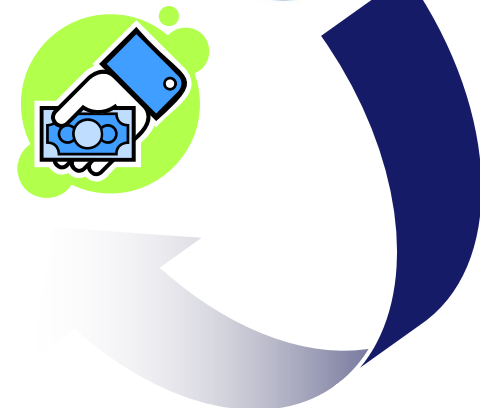
#### Local Governments



#### Individuals



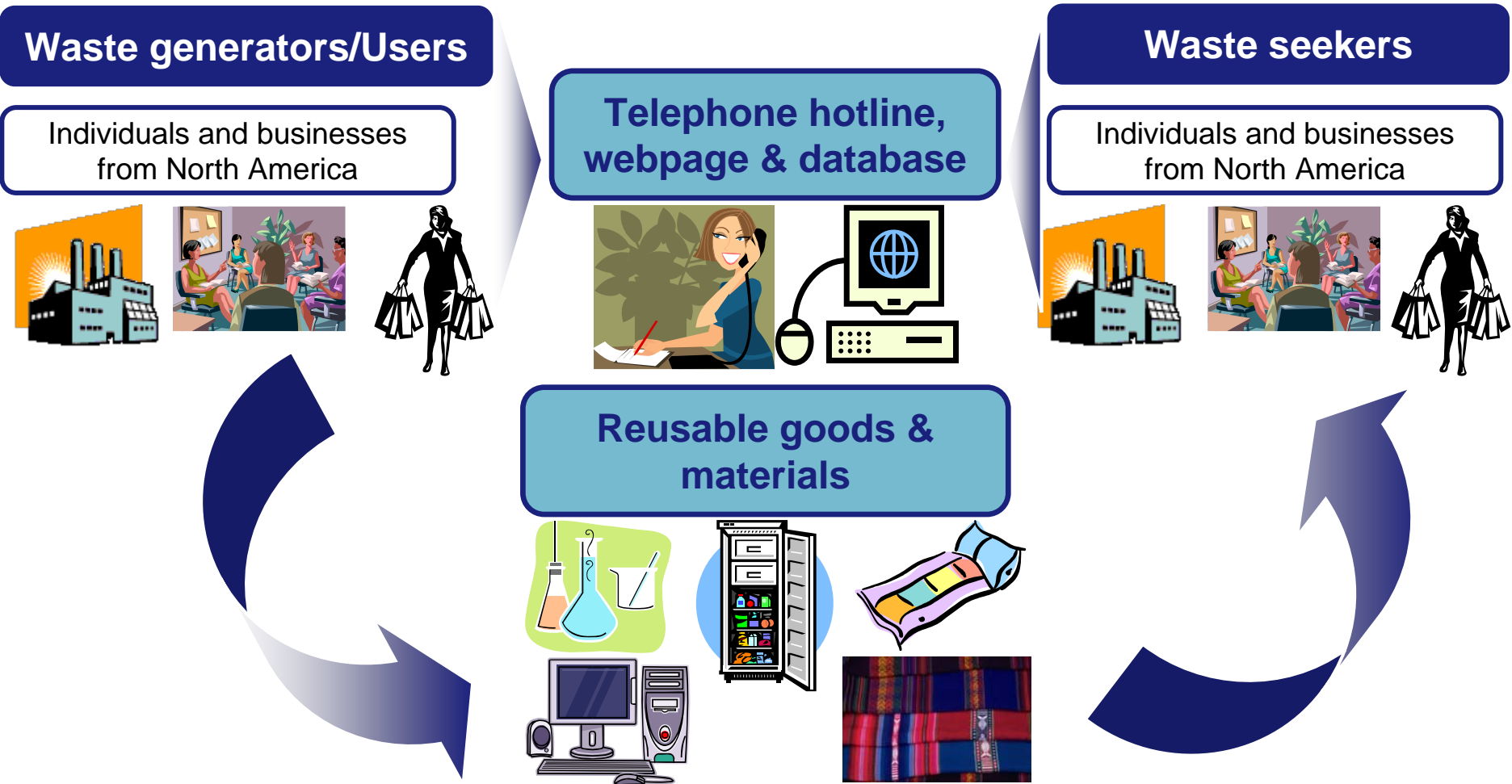
#### Industry, Banks



# Information instruments in focus

## Case study: Material Exchange in Canada- RCBC Mex: How does it work?

### The Recycling Council of British Columbia Materials Exchange



# Information instruments in focus

## Case study: Material Exchange in Canada- RCBC Mex: Lessons learned

### The Recycling Council of British Columbia Materials Exchange

#### Strengths

Easy way to reduce waste disposal and environmental impact



Facilitation of location and acquisition of 'hard-to-find' items



Cost savings for companies



#### Materials Exchanged

Wood  
Specialty Oils/lubricants  
Paint  
Chemicals  
Plastic  
Industrial pipe & tubing  
Medical supplies

#### Costs & requirements

**Costs...Very low**  
\$CDN 10 000 per year  
(6 500 EUR)

**Staffing...Very modest**  
1 full time employee  
2 part time employee

**Information Technology**  
Webpage and database



# Information for consumers

## Protecting consumers and changing behaviour

### Definition

**Consumer Advisory Systems** are an important part of consumer protection. For environmental protection, consumer advisory systems can provide three types of services:

**Precaution** (consumer advisory systems)

**Control** (legislation)

**Consumer care** (liability)

### Typology (organisation)

**Consumer organizations**

**Consumer information centers**

**Testing institutes**

**Governmental services**

**Private initiatives**

# Consumer Advisory System



The Federal Office of Consumer Protection and Food Safety

Authority responsible for risk management in the following areas:

Food



Feed



Commodities



Plant protection products



Effective and Safe Veterinary  
Drugs – Healthy Animals



Genetic Engineering



Health-Related Consumer  
Protection





# Consumer Advisory System

## What is the Ökotest?

**Ökotest** is a **testing institute**, established in **1985**, publishing their results in several **magazines** and **online**



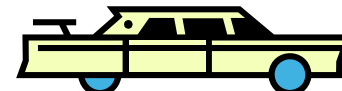
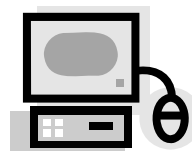
## Ökotest- the success story

**20 years, 240 magazines, 3 000 tests, 100 000 products, 100 law suits- only one lost**

## What is tested?

Anything one needs to live: cosmetics, baby food, washing powder, paints, painkillers, laptops, vehicles and chips. Recently, even financial services, insurances and financial assets have also been tested.

Each edition contains **10-12 tests** of over **200 products**.

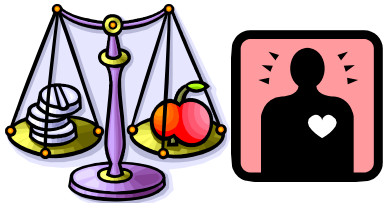




# Consumer Advisory System

## Impact

Health aspects highlighted in the first line



Publication of the results/ÖKO-TEST label



Bad/unhealthy products loose their demand



Producers are put under pressure to improve their products



## Ökotest in numbers

**Employees: 25**  
**Turnover (in 2003): 10 Million €**  
**Test costs a year: >1,9 Million €**

**Circulation: over 150.000 copies**  
**Readers: over 1,8 Million (2005)**



# Public reporting

**Informing citizens, community leaders and officials**

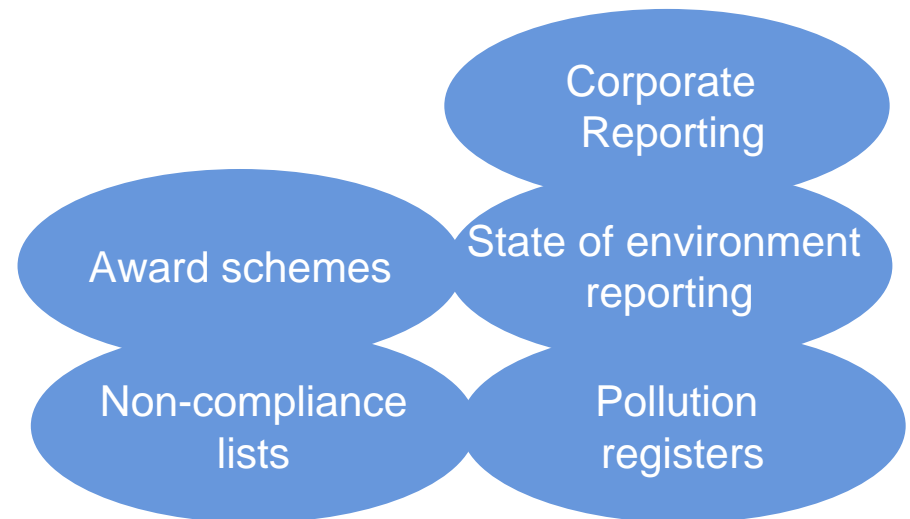
Influence behaviour

### **Incentives through information**

Increasing transparency of information can motivate firms to improve performance

### **Public information**

Knowledge of environmental conditions can build support for environmental initiatives and action



# Information instruments in focus

## Case study: PROPER, Indonesia

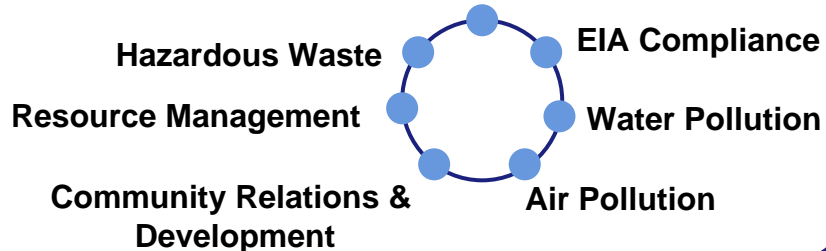
# Public reporting

## Informing citizens, community leaders and officials

Indonesia: Program for Pollution Control, Evaluation and Rating (PROPER)

### Environmental Performance Criteria

#### Environmental Management System



**Rating analysis**

#### Rating Analysis:

- Qualitative Information
- Quantitative Analysis
- Visual Analysis

**Public Disclosure**



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are needed to see this picture.

# Public reporting

## Informing citizens, community leaders and officials



# High5!

- Sustainability reporting in SMEs
- Close collaboration with GRI
- A practical guide: “How and what to report in 5 steps”
- Case studies showing feasibility, potential and success factors

# Public reporting

## Informing citizens, community leaders and officials

Zur Anzeige wird der QuickTime?  
eKompressor 函IFF (Unkomprimiert)?  
benötigt.

Stakeholder contribution

### GRI Guidelines

- Provision on how to report on economic, social and environmental issues
- High uptake across sectors

### Sector Supplements

- Contain sector specific indicator sets and guidance
- Available for Automotive, Financial Services, Mining and Metals, Public Agency, Tour Operators, Telecommunications

Challenge

GRI Sector Guidelines for the Energy Sector?

# Information instruments in focus

## Case study: Royal Awards for Sustainability, Denmark

# Royal Awards for Sustainability

## Informing citizens, community leaders and officials

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**Energy**

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**Investment**

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**Media/Film**

Zur Anzeige wird der QuickTime?  
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benötigt.

**Urban Innovation**

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benötigt.

**Young Scientist**

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**Tourism**

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## Presentation by SEPA

# Policy Reinforcement for Circular Economy

**Thank you for your attention !!!**





# Promote6

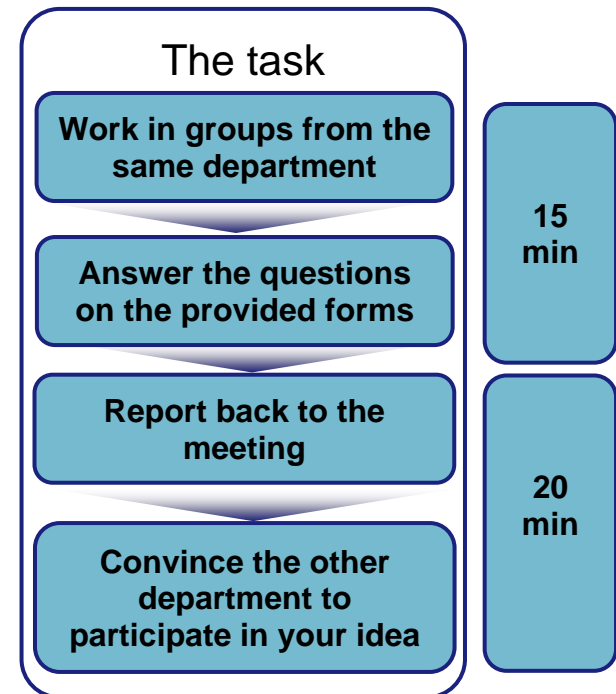
Group Exercise: Information Instruments

# Group Exercise

## Information instruments

1. Divide into four (or more) groups with participants from the same department.
2. What information instrument is your department best able to implement to promote the Circular Economy? Why?
3. What other department should be involved to improve the chances of success? Why is this other department the best partner?
4. When completed each group presents its idea.

### What do we do?



# Group Discussion

Promote6

## Information instruments



1. What information instrument is your department best able to implement to promote the Circular Economy? Why?

Report back in 20  
Minutes

**2. What other department should be involved to improve the chances of success? Why is this other department the best partner?**

**When completed each group presents its idea. You should try to convince the other department to participate with you to implement your idea.**

**Report back in 20  
Minutes**



# Promote7

Bringing the pieces together: Setting up the framework  
and designing a sound policy mix

# What is a sound policy mix?

A sound policy mix should address clearly articulated objectives with policy measures that have the greatest chances of success by applying a mix of mutually supporting approaches.

The policy mix should consider the resources of government to implement, evaluate and enforce the policy and the ability of the regulated parties to achieve the policy objectives.

Match policies to objectives

**‘want to achieve’**

Match policies with resources

**‘can do’**

# Setting a clear objective

What are the root causes?

Are there trends that will affect root causes of the problem locally? nationally? Globally?

## Determine objective

clearly understand and define the problem to be addressed, and effects and relationships to other environmental issues

What are the social, cultural, political, economic and legal implications of the problem?

Will there be support for policy measures to address the problem?

# Clearly identify obstacles

**Incentives** for companies to contribute to policy objectives under existing framework conditions...

**Ability** of companies to respond to policy instruments in an adequate way...

**Stakeholder relations**

**Brand reputation**

**Cost structure**

**Legal compliance**

**Organisational setup**

**Human Capital**

**Status of technology**

**Credit status**

**Reward / Penalise**

**Motivate**

**Support**

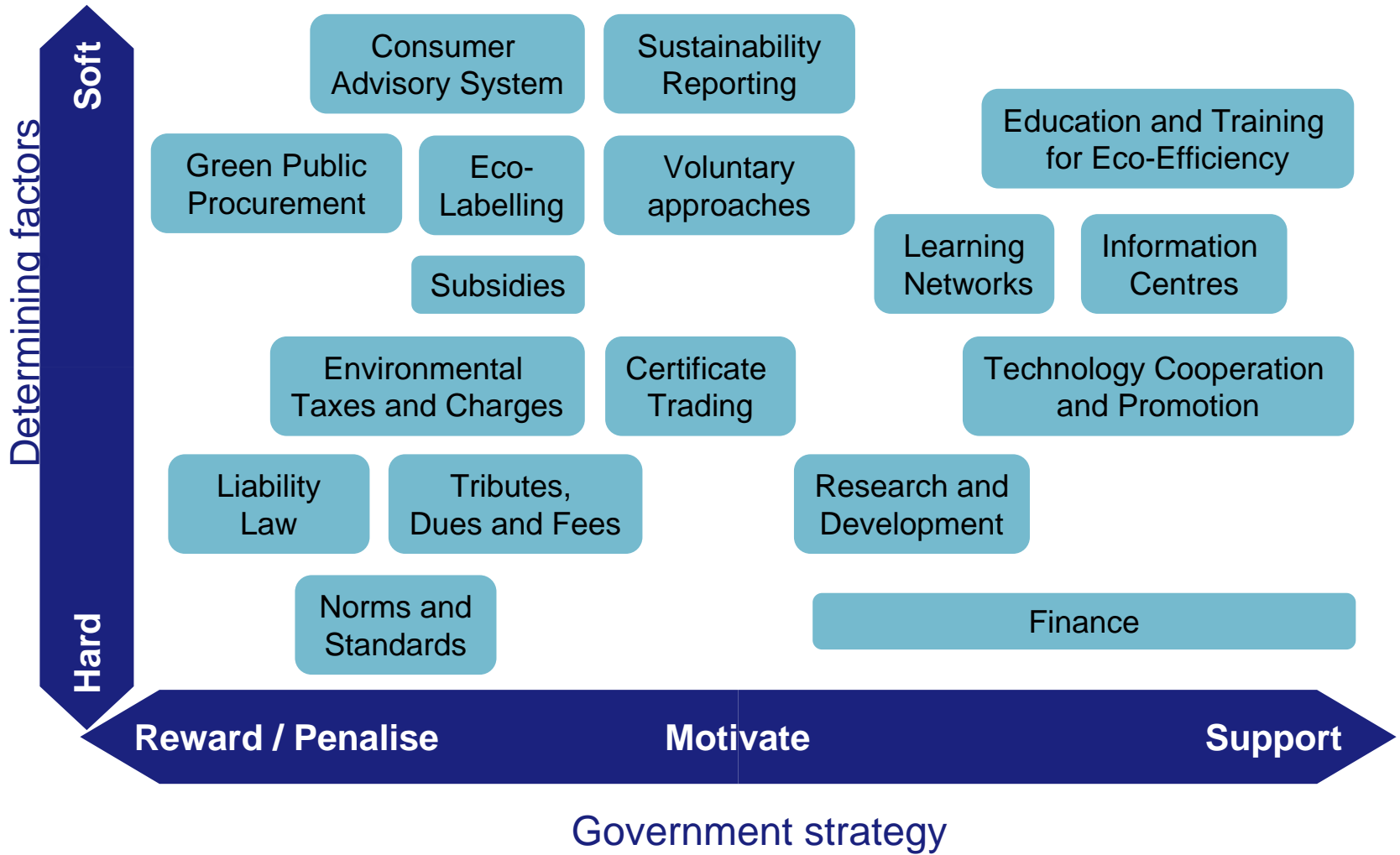
**Government strategy**



# Bringing the pieces together

## SCP policy instruments in the matrix

### And then choose from the Menu



# Bringing the pieces together

An illustrative example...

## A sample obstacle identification

Air pollution might be a problem in a specific region as...

... no legal framework exists to push producers to limit their emissions

**Legal compliance**

...companies are not aware of the problem and potential solutions

**Human Capital**

**Status of technology**

Appropriate technology is not available in the local market

**Reward / Penalise**

**Motivate**

**Support**

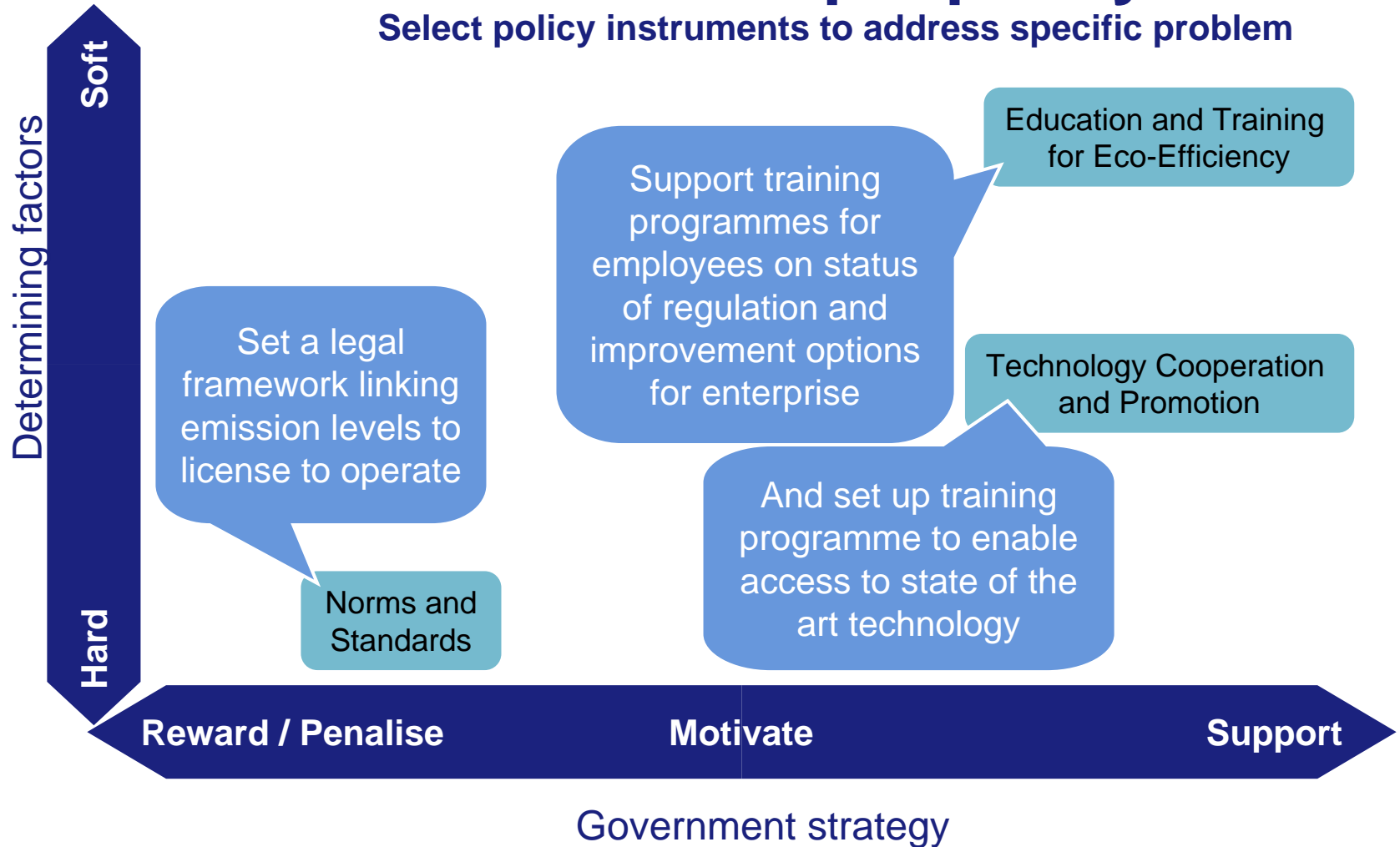
Government strategy

# Bringing the pieces together

An illustrative example...

## A sample policy mix

Select policy instruments to address specific problem

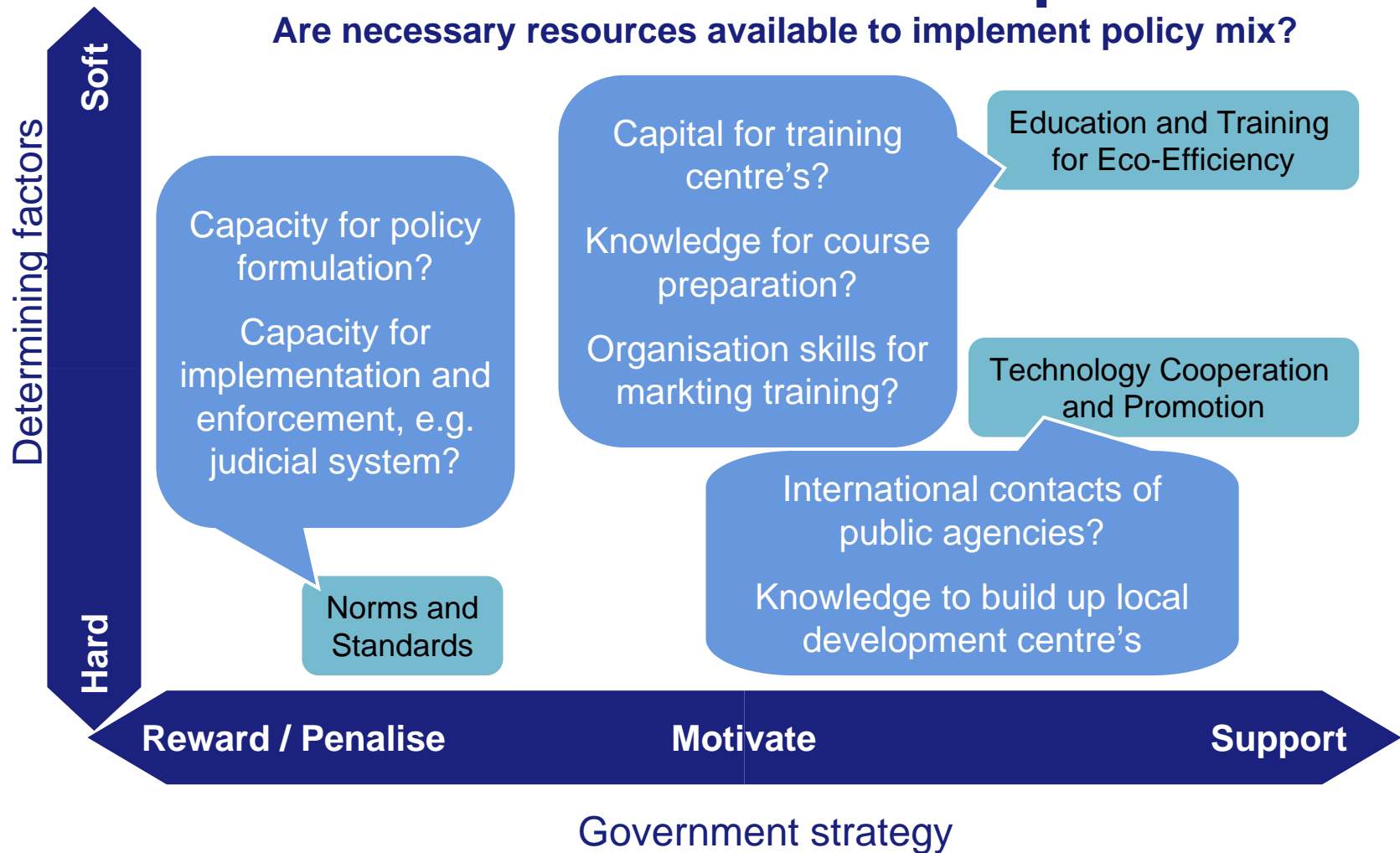


# Bringing the pieces together

An illustrative example...

## Governmental capacities

Are necessary resources available to implement policy mix?



# Next steps...

## Setting Priorities

Analysis of current production and consumption patterns and assembling the information in a structured way

## Assessing Policy Opportunities

Evaluate the policy options with respect to effectiveness, efficiency, equity and fairness, local appropriateness etc.

## Implementing the Policies

Distributing responsibilities, taking appropriate action and coordinating networks and partnerships for policy implementation

## Following up the Policies

Evaluate actions taken and progress achieved towards policy objective through indicators and deciding on corrective action

...next day!

# Remember

- Sustainability concerns should not be secondary
- Focus policies on underlying causes of environmental problems with attention to life-cycle considerations and increasing the productivity of material and energy use.
- Strict 'command and control' regulations alone may not be enough for SCP objectives.
- Integrate SCP thinking and objectives into all policy areas, not just environmental policy.
- Industry should be actively involved in the development of legislation, regulation and other governmental incentives to ensure their technical expertise and avoid inadvertent disincentives to innovation.
- Where possible take flexible approaches for promoting business participation in SCP including positive incentives and assistance.

# Promote8

**‘Promoting Circular Economy -  
Concepts and Principles’**

# Promoting Circular Economy - Measures & Instruments

What has been achieved today

## Day 2 – Summary **Promoting Circular Economy**

### - Measures & Instruments'

**Promote2**

**Regulatory  
Instruments: Setting  
the rules**

**Promote3**

**Economic  
Instruments:  
Getting the prices  
right**

**Promote4**

**Cooperation  
Instruments:  
Initiating  
cooperations**

**Promote5**

**Educational and  
Research  
Instruments:  
Educating and  
creating awareness**

**Promote6**

**Informational  
Instruments:  
Providing targeted  
information**

**Promote7**

**Bringing the pieces  
together: Setting  
up the framework  
and designing a  
sound policy mix**



### Day 3 – Outlook ‘Promoting Circular Economy – Measures & Instruments’



# Day 3

## ‘Implementing Circular Economy’

**Implement1** Overview on ‘Implementing CE’

**Implement2** Setting Priorities: Analysis of current products

**Implement3** Assessing Policy Opportunities: Drafting and A

**Implement4** Implementing the policies: Policy coordination

**Implement5** Following up policy implementation: Indica

**Implement6** Summary of ‘Implementing CE’

**See you  
tomorrow!**



# Training Packages on Policies of SCP and Circular Economy

Policy Reinforcement for Environmentally Sound and Socially

Responsible Economic Development in China (PRODEV)

3

The Third Day

# Implement1

**‘Implementing Circular Economy - Methods  
& Action Steps’**

# Day 2 – Recap ‘Promoting Circular Economy

## - Measures & Instruments’

Promote2

**Regulatory  
Instruments: Setting  
the rules**

Promote3

**Economic  
Instruments:  
Getting the prices  
right**

Promote4

**Cooperation  
Instruments: Initiating  
cooperation initiatives**

Promote5

**Education and  
Research  
Instruments:  
Educating and  
creating awareness**

Promote6

**Information  
Instruments:  
Providing targeted  
information**

Promote7

**Bringing the pieces  
together: Setting  
up the framework  
and designing a  
sound policy mix**

### Objectives of 'Implementing Circular Economy'

- Understand how to systematically set priorities, assess policy opportunities, coordinate necessary actions and to implement, evaluate and communicate the chosen policy package
- Have a set of tools at hand (Priority Finder, Material Flow Analysis, Life-Cycle Assessment, Benefit-Cost Analysis, etc) to set priorities, assess policy opportunities and implement policy packages
- Be aware of the policy cycle and the importance of coordinated actions to make a policy package and/or policy modifications successful

### Day 3 – Overview

## ‘Implementing Circular Economy -

## Methods & Action Steps’

### Implement2

**Setting Priorities:  
Analysis of current  
production and  
consumption  
patterns**

### Implement3

**Assessing Policy  
Opportunities:  
Drafting Policy  
Options**

### Implement4

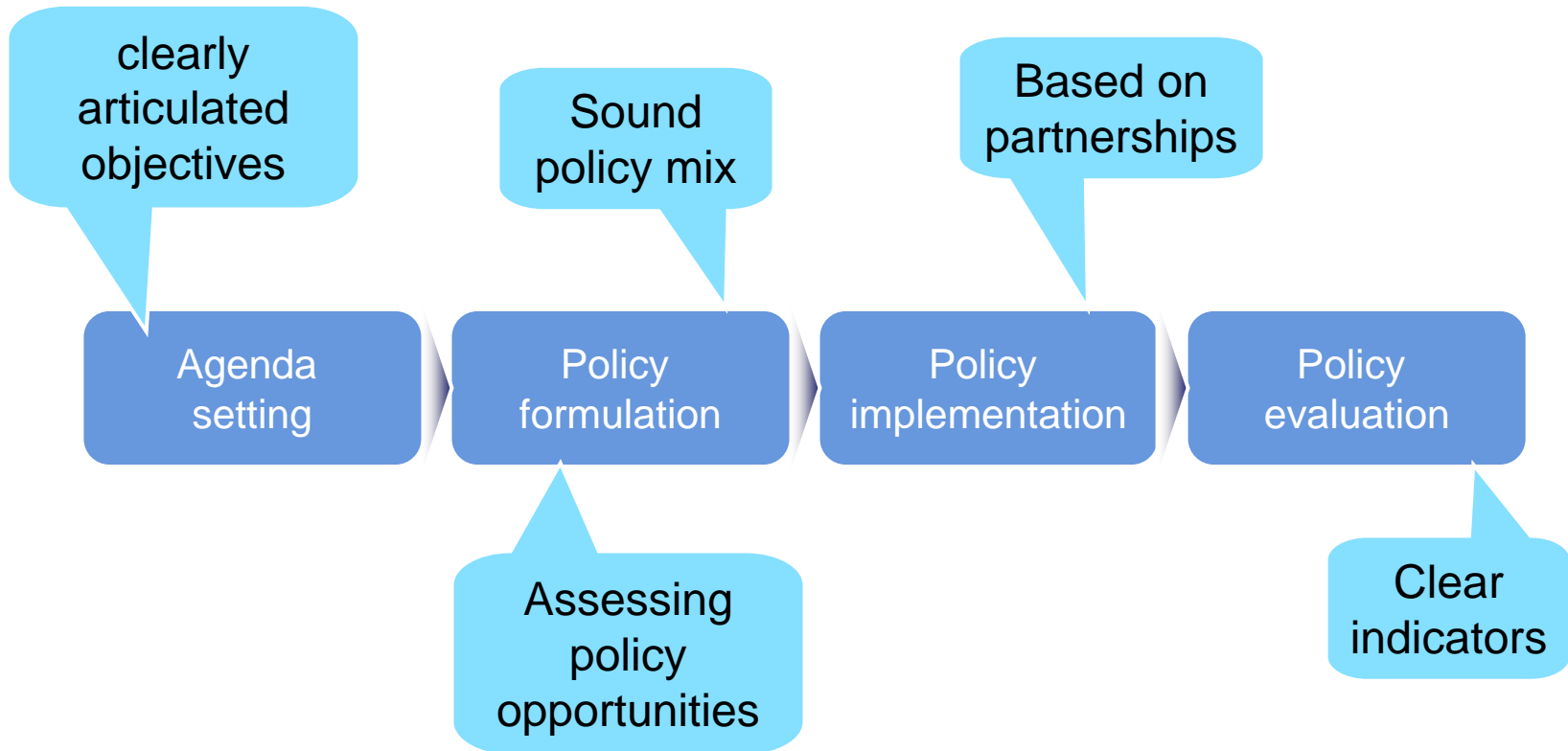
**Implementing the  
policies: Policy  
coordinaton through  
networks and  
partnerships**

### Implement5

**Following up policy  
implementation:  
Indicators,  
evaluation and  
corrective actions**

# The policy cycle

## What we will look at today





# Day 3

## ‘Implementing Circular Economy -

## Methods & Action Steps’

<b>Implement1</b>	Overview of ‘Implementing Circular Economy - Methods & Action Steps’	Objectives and overview for Day 3
<b>Implement2</b>	Setting priorities: Analysis of current production and consumption patterns	Introducing priority setting Stock taking Assessing Focussing
<b>Implement3</b>	Assessing policy opportunities: Drafting policy options	Determining Policy Options Policy Analysis
<b>Implement4</b>	Implementing the policies: Policy coordination through networks and partnerships	Challenges in policy implementation Opportunities to improve policy implementation

# Day 3

## 'Implementing Circular Economy - Methods & Action Steps'

**Implement5** Following up policy implementation: Indicators, evaluation and corrective action

What to monitor

Indicator and target development

Monitoring and corrective action

Case studies

What to monitor

**Implement6** Summary of 'Implementing Circular Economy - Methods & Action Steps'

Summary of Day 3

# Policy reinforcement for Circular Economy

# Let's get started!



# Implement2

Setting Priorities: Analysis of current production and consumption patterns

# Bringing the pieces together

## Selecting an optimal policy mix



## Purpose...

Determining political priorities and topics that require attention and action by policy makers

### Key issues to consider

- Understand the problems and underlying causes to determine policy objectives.
- What trends affect underlying causes of the problem?
- Will there be support for policy measures to address the problem?
- Does existing policy address the issue?
- What level of environmental improvement is achievable?

# Policy reinforcement for Circular Economy

Introducing priority setting

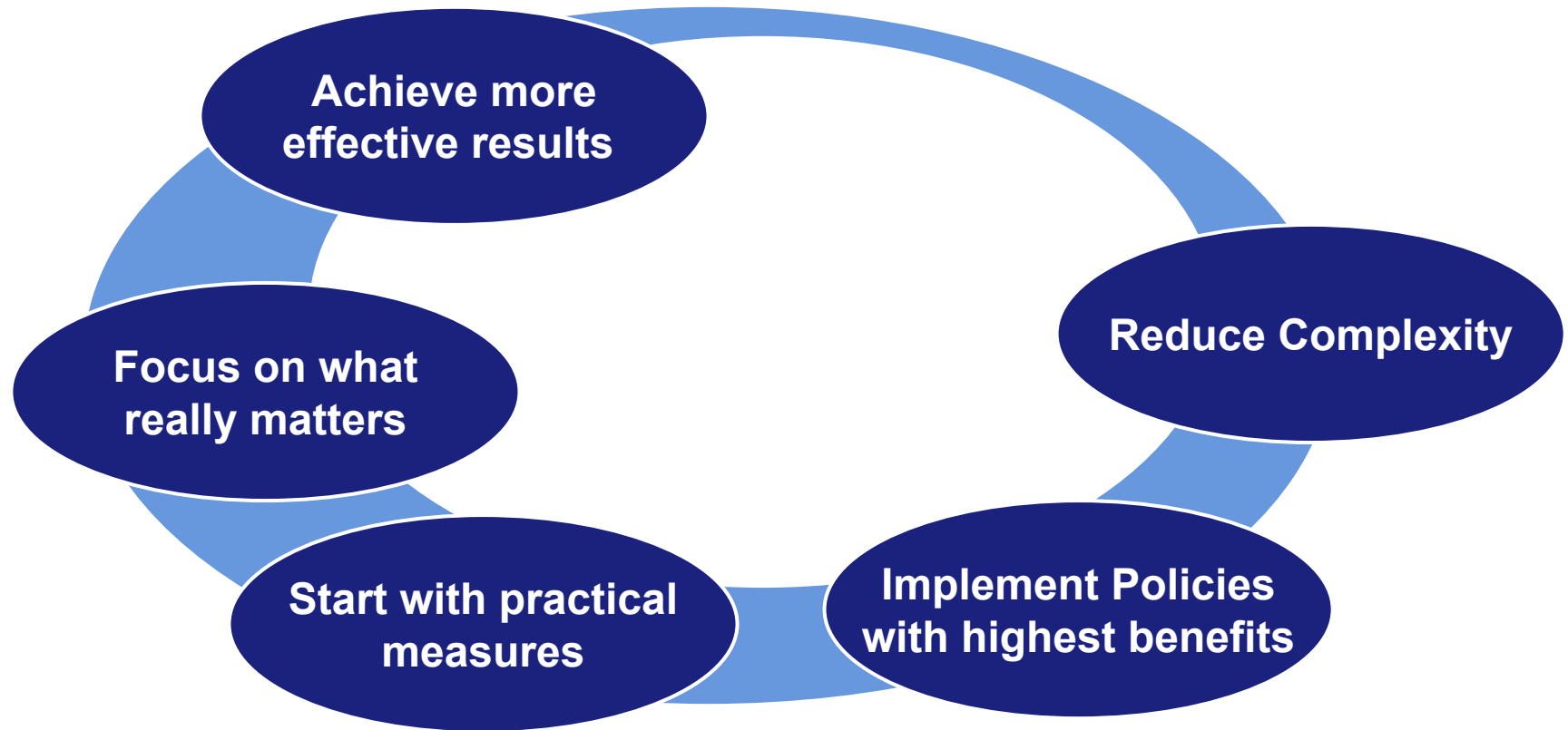
Introducing priority setting

Stock taking

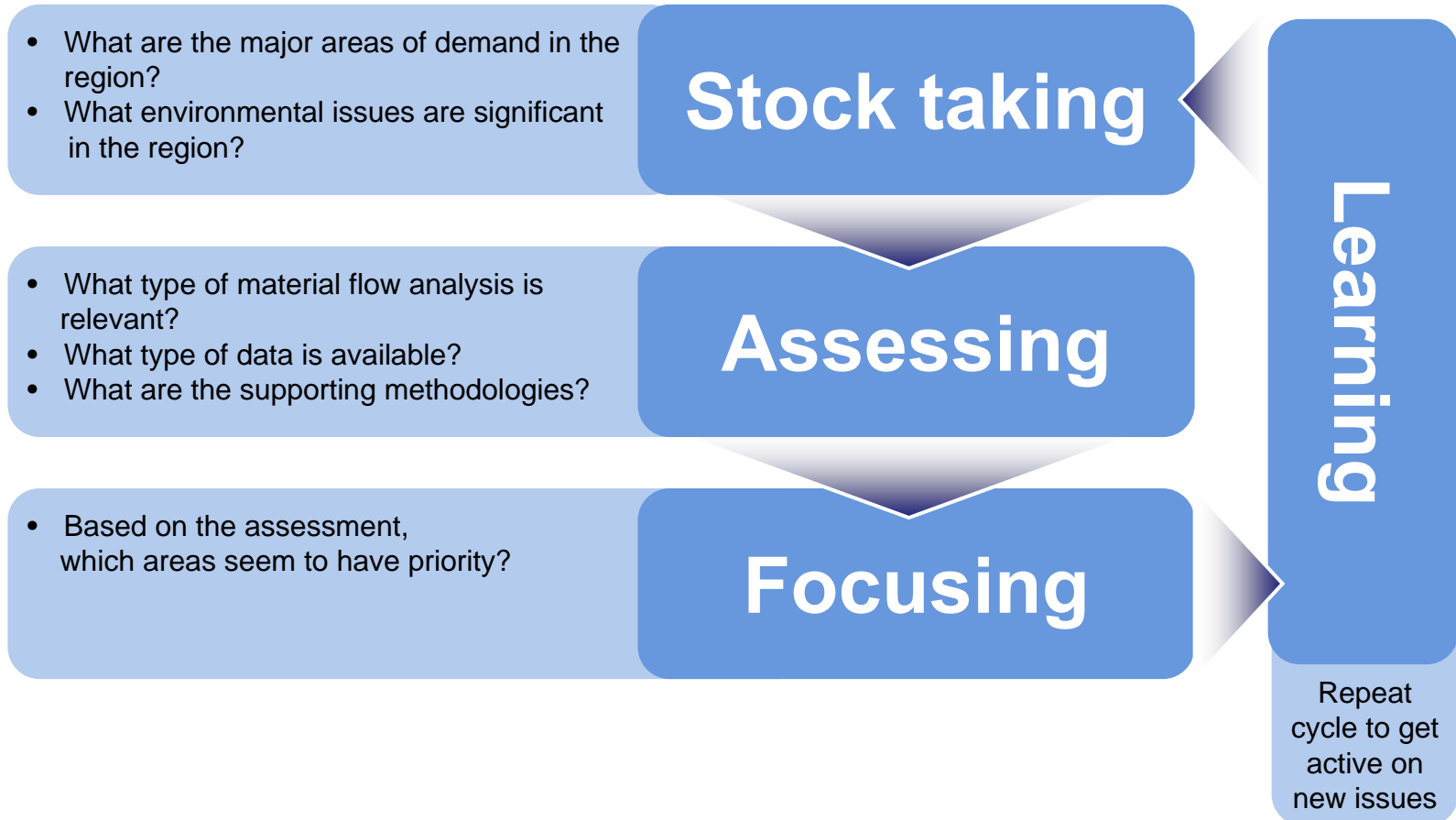
Assessing

Focussing

# Why is priority setting important?



# Steps for priority setting





# Policy reinforcement for Circular Economy

Stock taking

Introducing priority setting

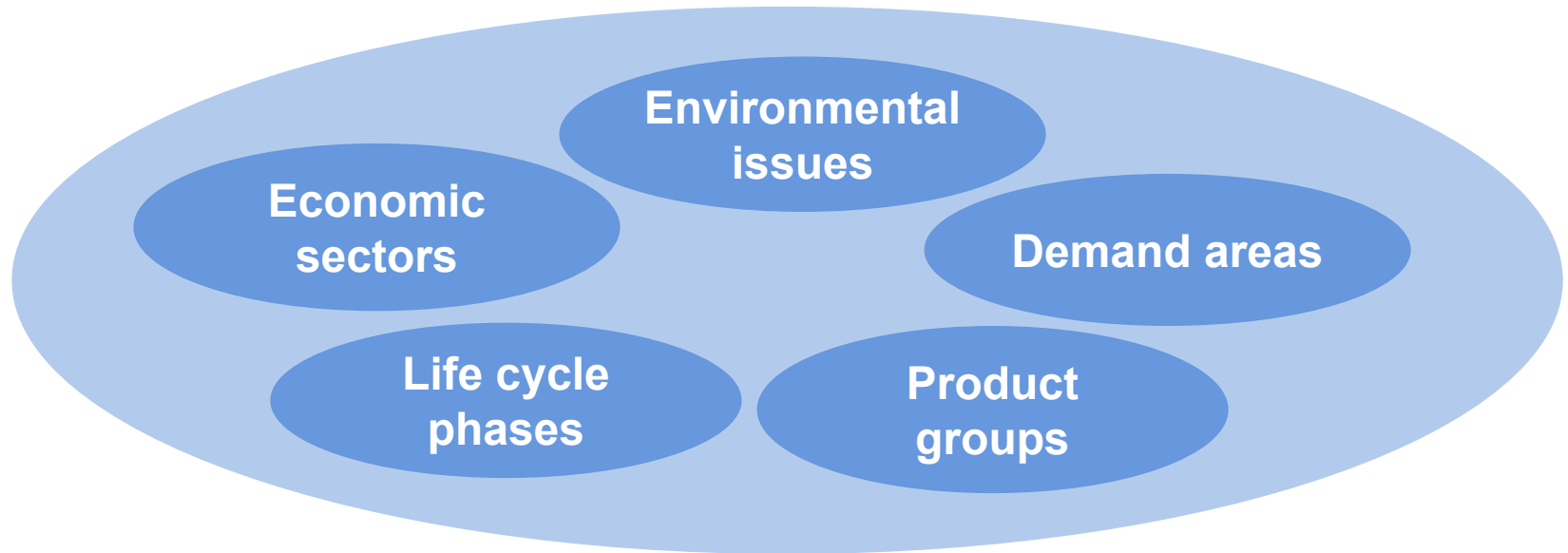
Stock taking

Assessing

Focussing

# Stock taking

in terms of...



# Stock taking

## to identify...

1. **Resource intensive consumption and production patterns** of your town/region/country
2. **High environmental impact economic sectors:** Which sectors and activities have high resource use and/or environmental impacts, considering both production and consumption?
3. **Acute environmental problems:** What are the most pressing environmental issues of the town/region/country?
4. **Businesses/products and services adding social and environmental value** to the town/region/country: Which products and services are helping to preserve the state of the environmental or enhancing the life quality of citizens?

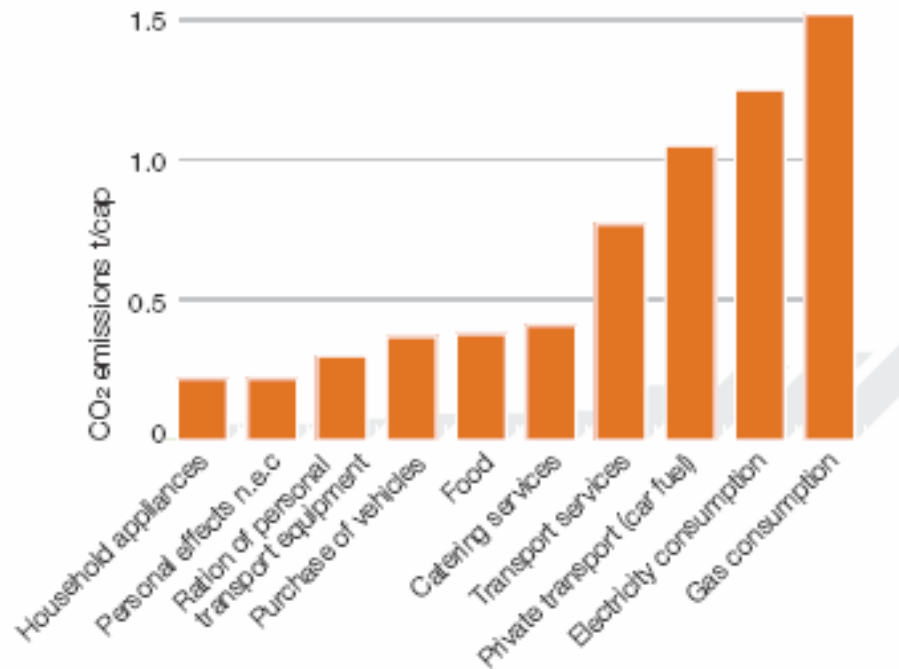
# Introducing priority setting

## Case study: Stock-taking



“On current trends, an extra 113m tonnes of waste will need to be dealt with by 2020”

Fig 3 UK household CO<sub>2</sub> emissions from consumption



# Policy reinforcement for Circular Economy

Assessing

Introducing priority setting

Stock taking

Assessing

Focussing

# Assessing

### Material Flow Analysis (MFA)

**Allows to systematically assess:**

Production and consumption patterns

Material flows related to sectors, product chains or areas of demand

Environmental and social impacts related to these material flows

### Material Flow Analysis tools can identify resources used...

- along the life cycle of a specific product or service
- along the life cycle of the products or services consumed in areas of demand
- along the life cycle of the products or services consumed in a specific region
- in production processes in regions
- within different sectors
- within an organisational entity, e.g. business or governmental department
- in an economy, including resource use connected to imports and exports

Address underlying cause of many environmental impacts (Less resources used = Less pollution)

Assign monetary value to different resource flows to achieve comparability

Compare different inputs according to material intensity

Capture inputs used along life cycle beyond immediate scope

Flexible methodology that can be adapted to concrete needs in a specific situation

## Material Flow Analysis Tools

**Ecological  
Footprint  
Analysis**

**Accounting for  
Material Flows**

**Material Input per  
Service Unit (MIPS)**

Linkage to economic indicators

**Eco-intensity indicators**



# Approaches for priority setting

## Ecological Footprint explained

### Ecological Footprint Analysis

#### Objective

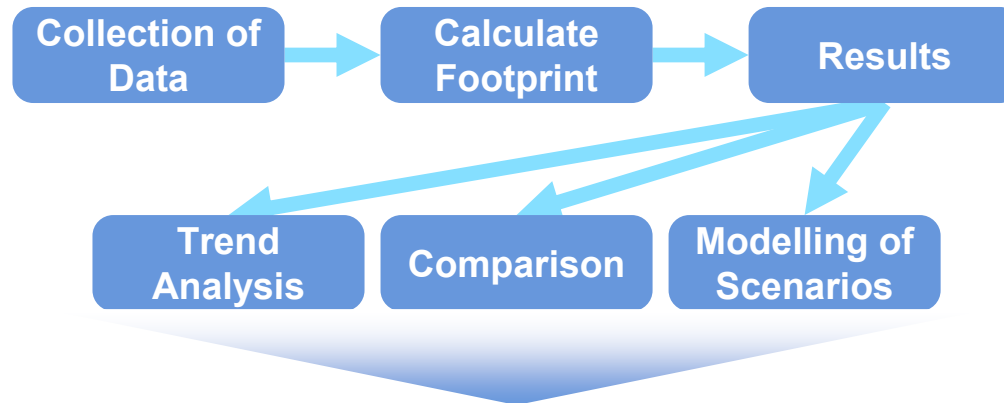
Identify SCP patterns in regions

To measure the demand upon natural resources

Design policy interventions/ strategies on a regional/local level

#### Method

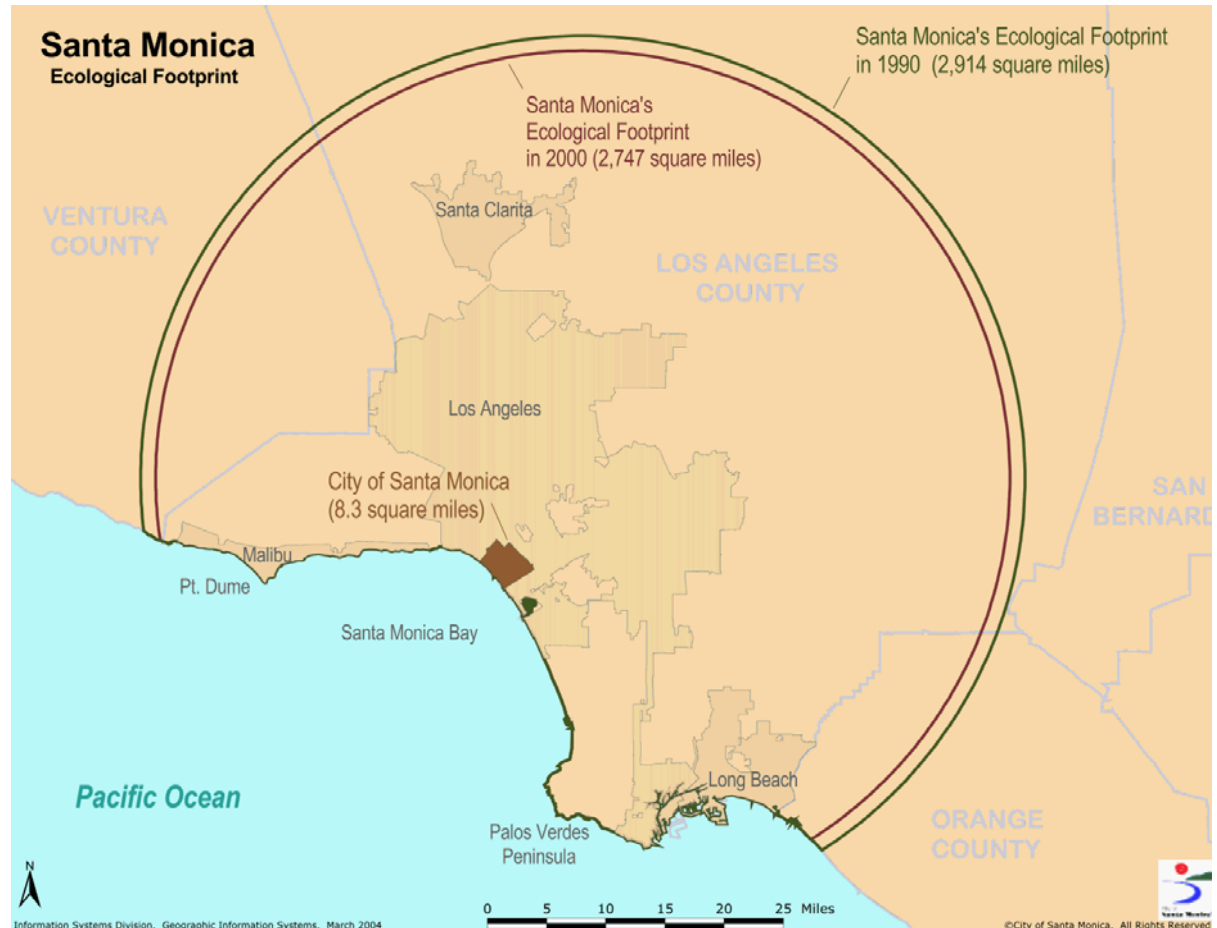
“Calculation that estimates the area of Earth's productive land and water required to supply the resources that an individual or group demands, as well as to absorb the wastes that the individual or group produces.”



**Prioritise Strategies which reduce footprint**

# Local Ecological Footprint

**Comparing  
actual  
space to  
ecological  
footprint:  
Striking  
mismatch in  
consumer  
societies**



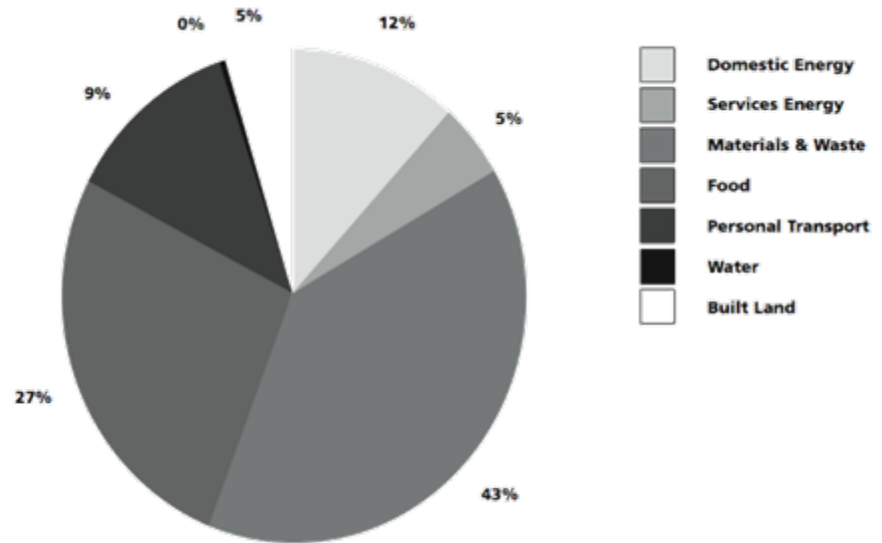
# Local Ecological Footprint

## Example

### Northern Limits Project' objectives:

- Calculate resource efficiency of the Northern Ireland economy
- Calculate the Ecological Footprint of Northern Ireland
- Model a number of improvement Scenarios in terms of Ecological Sustainability
- To make recommendations on a SD Strategy for Northern Ireland
- To assess data gaps and needs and make recommendations

### The ecological footprint of Northern Ireland residents



Source: [www.northern-limits.com](http://www.northern-limits.com)

# Approaches for priority setting

## Accounting for Material Flows explained

### Accounting for Material Flows

#### Objective

Identify patterns of resource use on different levels

Plan policy interventions

Monitor trends in resource use

#### Method

##### Economy-wide

Overall picture of resource to (imports), within and from (exports) a society

##### Sectors

Material Flows from a production perspective:  
Which industry sectors matter most?

##### Fields of demand

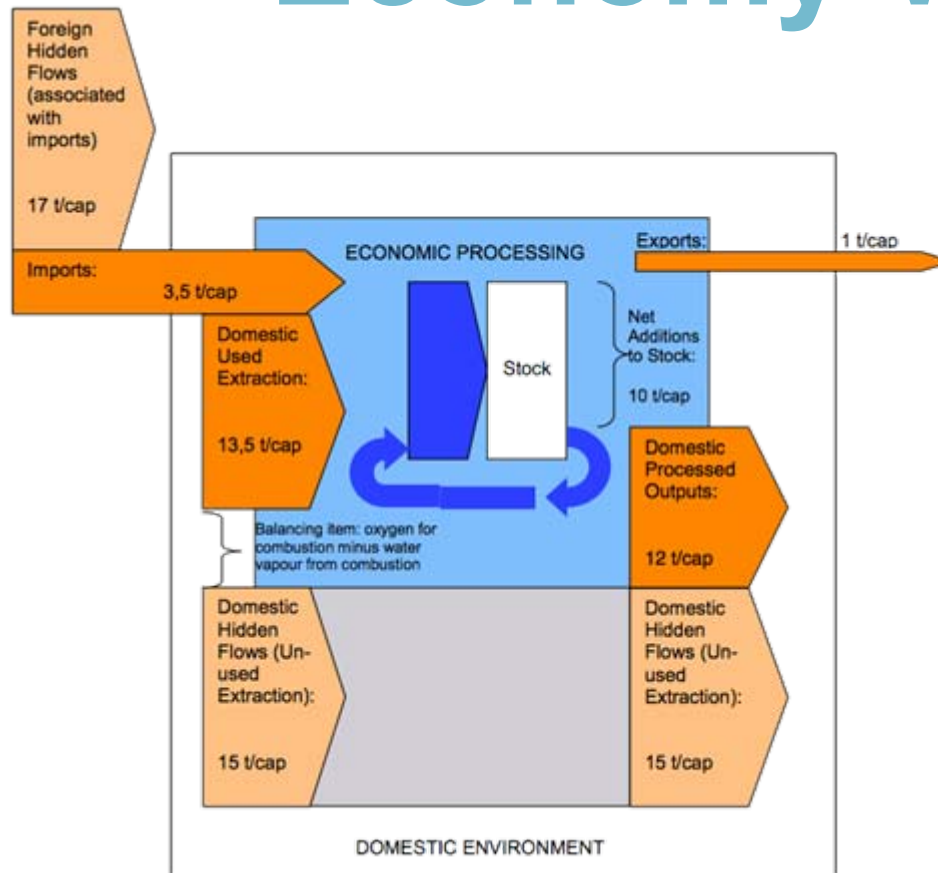
Material Flows from a consumption perspective:  
Which fields of demand matter most?

# Approaches for priority setting

## Material Flows – an economy-wide application

### Material Flows

# Economy-wide



Estimated economy-wide material flows in the EU, on a per capita and year basis for the second half of the 1990ies

Source: Wuppertal Institute 2005:  
Resource Use in European Countries

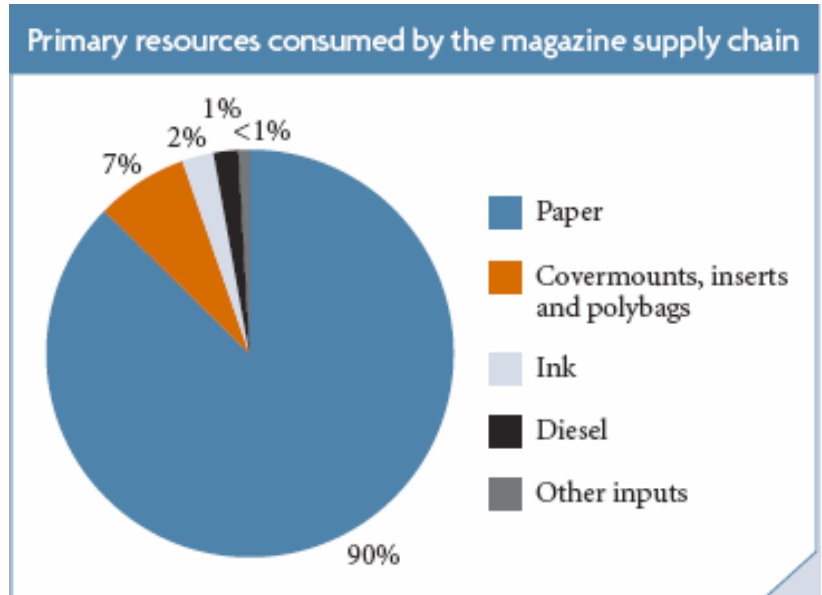
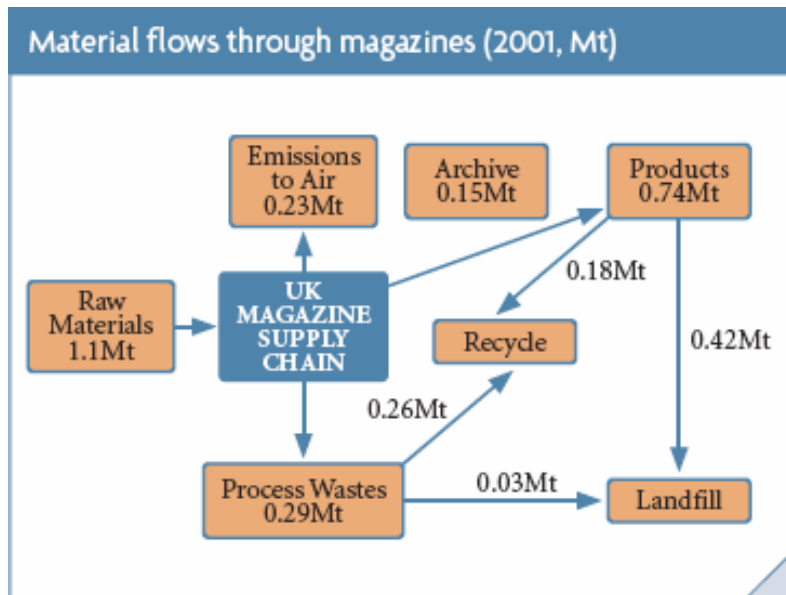
# Approaches for priority setting

## Material Flows – an industry sector application

### Material Flows

# Industry sectors

## Mass Balance of UK Magazine Publishing Sector



Source: Biffawards

# Approaches for priority setting

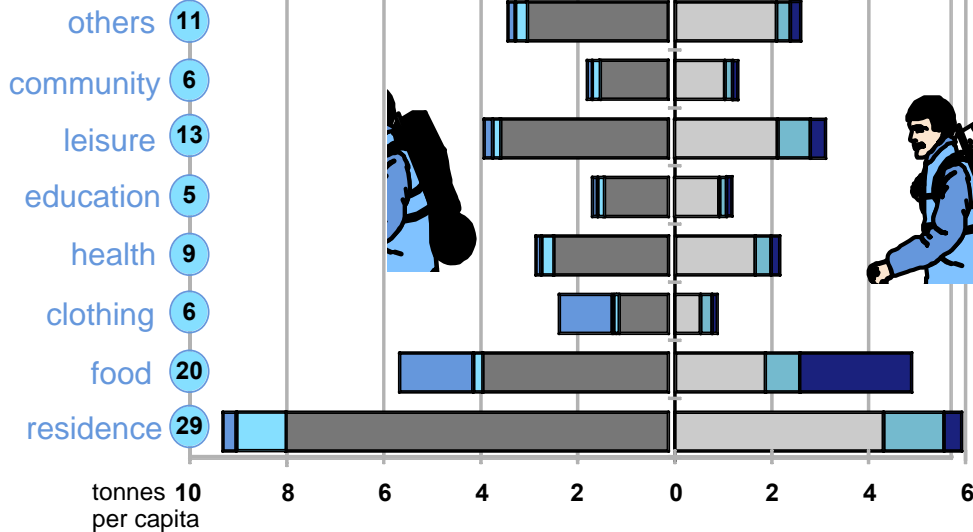
## Material Flows – an industry sector application

### Material Flows

# Fields of Demand

material intensity per capita per year

76 tonnes = 100 %



Material Flows as related to key fields of demand

*Residence and food emerge as key fields to be addressed*

For non-European countries, results will be different?!

Source: Wuppertal Institute

Life Cycle  
Assessment (LCA)

Material Input per  
Service Unit (MIPS)

# MIPS Material Input per Service Unit

## Objective

Identify product chains or demand areas with highest resource consumption

Design policy interventions to tackle the consumption side

## Method

1. Compile main inputs (raw materials, energy, goods, services) needed (e.g. in a product chain or for an area of demand)
2. Calculate life cycle wide material input factors for these inputs (e.g. water needed to provide certain quantity of goods), if not readily available
3. Calculate life cycle wide material use by multiplication of input (1) and material input factor (2)
4. Add up data for single inputs to get the total for each demand area

Info on methodology and material input factors available at [www.mips-online.info](http://www.mips-online.info)



# MIPS & products



	Weight, excl. packaging (kg)	Abiotic raw materials (kg)	Material intensity factor (kg/kg)
PC	23.1	1500*	65
Notebook	2.8	434	155
Handheld	0.8	81	101
Personal organiser (paper-based)	0.4	4	10

\* Estimations from 1998 (outside the scope of the HP study)

Source: Wuppertal Institute

# MIPS of a Company

## Example Ecological Backpack

### land used

- 5 million hectares;  
➤ close to the area of Switzerland



### abiotic materials

- 15 million tonnes (non-renewable materials) e.g. fossil fuels, fertilisers  
➤ equivalent to the amount needed to produce 833 thousand big cars

### soil lost

- 100 million tonnes due to erosion;  
➤ equivalent to 3 million loaded trucks

### biotic materials

- 38 million tonnes (renewable materials) e.g. animal fodder, harvest residues  
➤ equivalent to the amount needed to produce 20 billion pairs of jeans

# Approaches for priority setting

## MIPS to identify hot spots within product chains

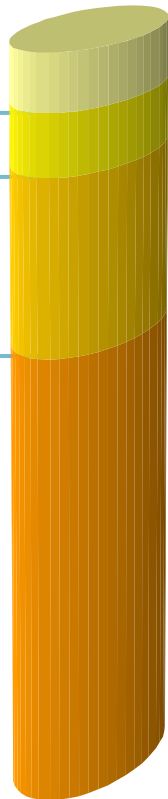
### Example Hotspots within product chains

direct material input

abiotic materials

biotic materials

soil erosion



### Direct material input of a food producer company

12 million tonnes of agricultural and semi-processed food materials every year close to the 15 million tonnes that Finland consumes every year

### Priority life cycle phases

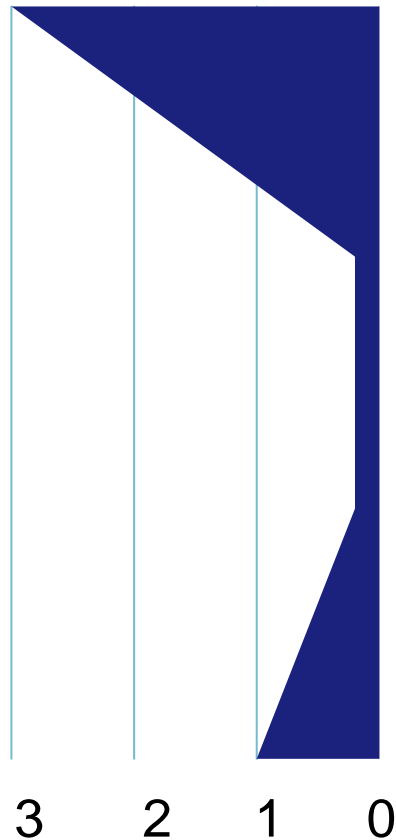
- **agriculture** is a high priority area for footprint reduction, soil erosion being a key aspect to address;
- the **processing** phase is important for products with typically high energy- or raw materials-intensive processes.

Source: Wuppertal Institute

# Approaches for priority setting

## MIPS to identify hot spots within product chains

Number of priority areas in life cycle phases



Raw materials	Energy	Water	Land use	Waste	Emissions to air	Effluents to water
---------------	--------	-------	----------	-------	------------------	--------------------

Agriculture

Coffee cultivation is the largest contributor to the overall environmental score of the coffee chain. **Increased shares of shade grown coffee** and less intensive farming techniques, including **reduced levels of agrochemicals**, may help reduce the footprint.

KF processing

Raw materials	Energy	Water	Land use	Waste	Emissions to air	Effluents to water
---------------	--------	-------	----------	-------	------------------	--------------------

Even though instant coffee production ranks first in **energy use** among different food products, the significant improvements already achieved in this phase led to a lower grade.

Distribution

Raw materials	Energy	Water	Land use	Waste	Emissions to air	Effluents to water
---------------	--------	-------	----------	-------	------------------	--------------------

Energy use and emissions to air are most important when **road transport** is used. However, in the overall context of the coffee chain, and in the light of KF-specific information, this phase assumes low relevance.

Consumption

Raw materials	Energy	Water	Land use	Waste	Emissions to air	Effluents to water
---------------	--------	-------	----------	-------	------------------	--------------------

While **coffee brewing** is a large energy user in the coffee chain, waste generation is an issue stakeholders give considerable importance to.

### Eco-Intensity Indicators

#### Objective

Link material flow data to economic indicators

Improve decision making and raise accountability

Complement financial statements

#### Method

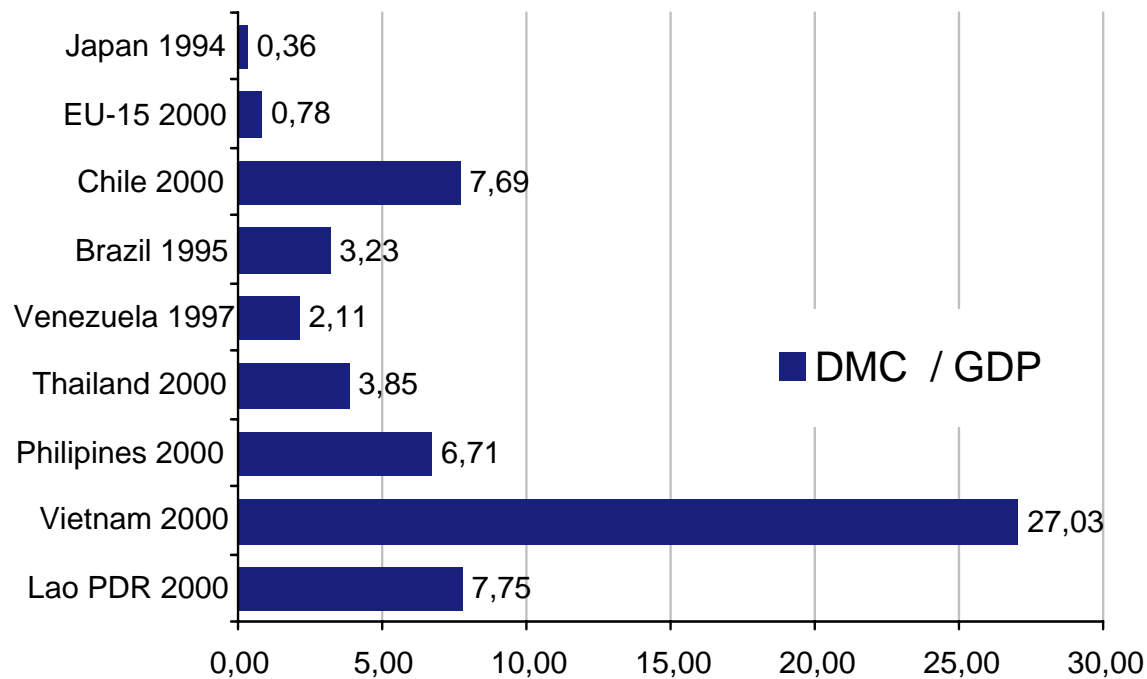
1. Compile 'absolute' indicators already described (e.g. environmental footprint)
2. Select economic indicator as denominator (e.g. economic value added or GDP)
3. Calculate ratio to assess eco-intensity of different economic sectors

$$\text{Eco-Intensity} = \frac{\text{Environmental impact}}{\text{Value added}}$$

# Approaches for priority setting

## Eco-Intensity – example on country level

### Eco-intensity on country level



Eco-intensity comparison of countries

Linking resource consumption to economic activity

Similar comparisons possible for economic sectors

Data is given as tons / 1000 \$US

# Policy reinforcement for Circular Economy

Focussing

Introducing priority setting

Stock taking

Assessing

Focussing

# Focussing

## Other factors that might be considered when setting priorities

### Political agendas

Regional, national and international agendas and priorities

### Best-practice replication

Best practice results in other regions show where improvements are feasible

### Stakeholder Opinions

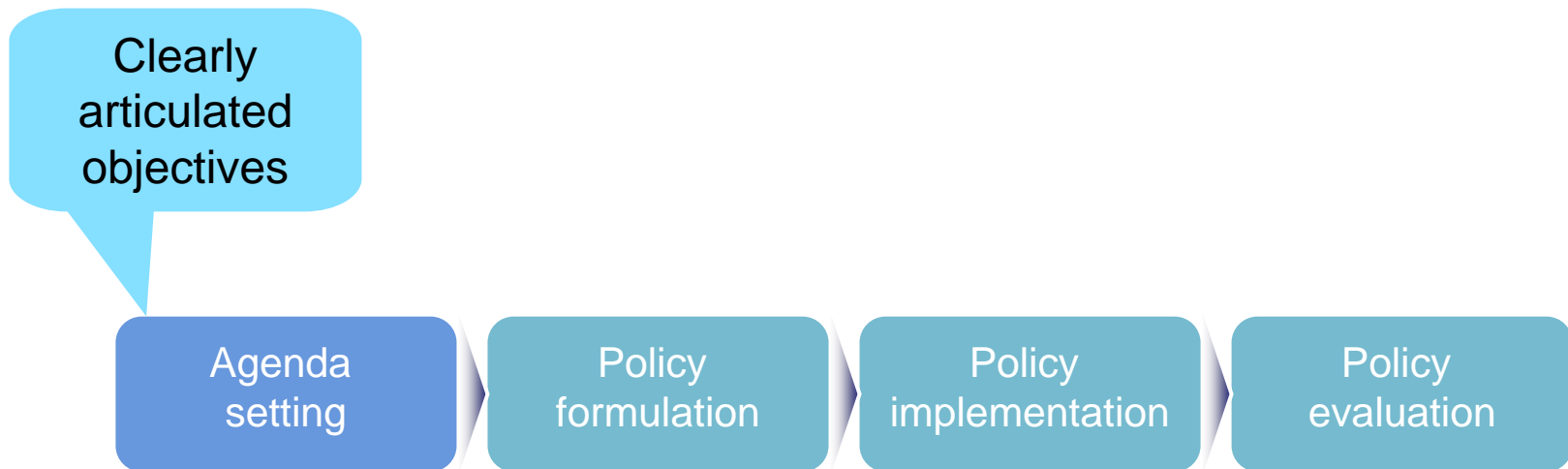
Priorities by key stakeholder groups within and outside government

More details in Implement3...



# Navigation...

Progress so far...



...and what will come next

# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Implement2

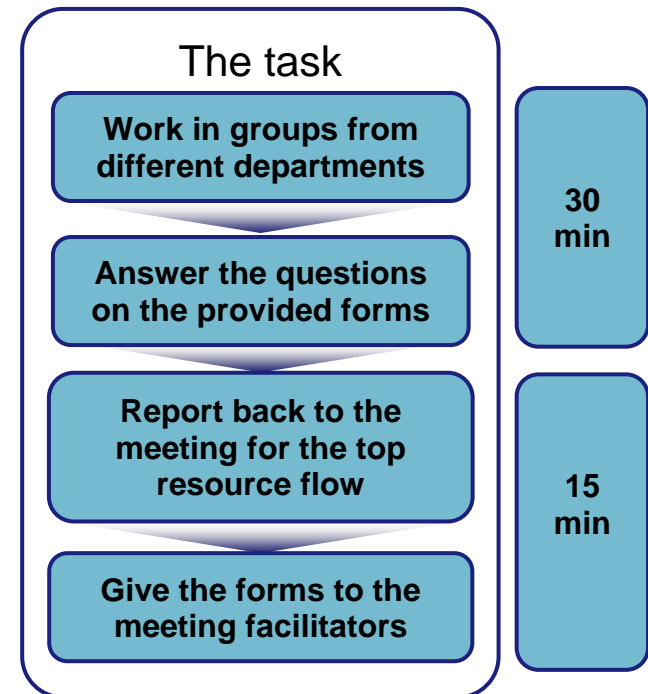
Group Exercise: Applying a Priority Setting Matrix

# Applying a Priority Setting Matrix

## Group Exercise

1. Divide into four (or more) groups with participants from different departments.
2. Consider a key economic sector in China/your region and the main resource flows, environmental impacts and economic importance of the sector.
3. Fill in your group's responses in the provided forms.
4. When completed each group presents its results for the top resource flow.

### What do we do?



# Group Exercise

## Implement2 Applying a Priority Setting Matrix

1. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.

Consider resource flows in terms of:

- abiotic raw materials (e.g. minerals, water, fossil fuel)
- biotic raw materials (e.g. wood)
- water
- erosion
- air

**Group: Phosphorus chemical production**



Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
5. What is the severity of negative economic impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
6. What is the expected future trend for the resource flow? (rank 1 for strong decrease, 5 for strong growth)			
7. What other economic sectors are connected to this resource flow?			
8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that might be useful in addressing these resource flows?			

Report back in 30  
Minutes



# Group Exercise

## Implement2 Applying a Priority Setting Matrix

**2. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.**

**Consider resource flows in terms of:**

- abiotic raw materials (e.g. minerals, water, fossil fuel)
- biotic raw materials (e.g. wood)
- water
- erosion
- air

**Group: Coal chemical production**



Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
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8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that might be useful in addressing these resource flows?			

Report back in 30  
 Minutes





# Group Exercise

## Implement2 Applying a Priority Setting Matrix

**3. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.**

**Consider resource flows in terms of:**

- **abiotic raw materials (e.g. minerals, water, fossil fuel)**
- **biotic raw materials (e.g. wood)**
- **water**
- **erosion**
- **air**

# Group: Urban infrastructure

Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
5. What is the severity of negative economic impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
6. What is the expected future trend for the resource flow? (rank 1 for strong decrease, 5 for strong growth)			
7. What other economic sectors are connected to this resource flow?			
8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that might be useful in addressing these resource flows?			

Report back in 30  
Minutes

## Exercise

## Implement2 Applying a Priority Setting Matrix

**4. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.**

**Consider resource flows in terms of:**

- abiotic raw materials (e.g. minerals, water, fossil fuel)
- biotic raw materials (e.g. wood)
- water
- erosion
- air



# Group: Supermarkets & retail marketplaces

Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
5. What is the severity of negative economic impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
6. What is the expected future trend for the resource flow? (rank 1 for strong decrease, 5 for strong growth)			
7. What other economic sectors are connected to this resource flow?			
8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that might be useful in addressing these resource flows?			

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Report back in 30  
Minutes

## Group Exercise

## Implement2 Applying a Priority Setting Matrix

**5. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.**

**Consider resource flows in terms of:**

- abiotic raw materials (e.g. minerals, water, fossil fuel)
- biotic raw materials (e.g. wood)
- water
- erosion



- air

## Group: Pharmaceuticals

Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
5. What is the severity of negative economic impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
6. What is the expected future trend for the resource flow? (rank 1 for strong decrease, 5 for strong growth)			
7. What other economic sectors are connected to this resource flow?			
8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that			

ASIA PRO-ECO



Report back in 30  
Minutes

might be useful in addressing these resource flows?			
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# Group Exercise

## Implement2 Applying a Priority Setting Matrix

6. Consider a key economic sector in China/your region. Think about the main material and resource flows connected to the sector. Consider environmental impacts that can result from the resource flows. Also consider the economic sectors that are active in the resource flow and the importance of these sectors to the economy.

Consider resource flows in terms of:

- abiotic raw materials (e.g. minerals, water, fossil fuel)
- biotic raw materials (e.g. wood)
- water
- erosion
- air

# Group: Construction

Sector:	Resource flow #1	Resource flow #2	Resource flow #3
1. What are some important resource flows that are connected to the sector?			
2. What environmental problems are connected to the resource flows?			
3. What is the severity of the environmental problems connected to the resource flow? (rank 1 for low – 5 for large)			
4. What is the severity of negative social impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
5. What is the severity of negative economic impacts caused by the effects from this resource flow? (rank 1 for low – 5 for large)			
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7. What other economic sectors are connected to this resource flow?			
8. What is the contribution of these economic sectors to the economic health of the region? (rank 1 for important – 5 for not important)			
9. What policy instruments have been discussed that might be useful in addressing these resource flows?			



Report back in 30  
Minutes



# Implement3

Assessing Policy Opportunities: Drafting and  
Analysing Policy Options

# Determining policy options

## Selecting an optimal policy mix



## Purpose...

Using the policy objectives as a starting point identify and analyse policy options with respect to their ability to achieve the desired objectives

### Key issues to consider

Start with clear policy objectives

Policy options should address the objectives

# Policy reinforcement for Circular Economy

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Determining Policy  
Options

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Determining Policy Options

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Policy Analysis

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# Formulating policy options

- Best practice guides from leading jurisdictions
- Policy compendiums
- In-house policy studies of other jurisdictions (what worked, what did not, why?)
- Research institutions

## Best Practice

- International
- National
- Regional
- Local

## Political Agendas

- Industry organisations & other regulated parties
- NGOs & citizen groups
- Academics/Universities

## Key Stakeholders

- Consider existing instruments in use and how they might be applied
- Consider other policies that might influence the policy the objective

## Existing Policies

What are others doing to solve the problem?

---

Which policy instruments fit with political developments?

---

What do key stakeholders see as options?

---

How do other policies affect the policy objective?

# ‘Best Practice’

## Successful

Has achieved tangible results in other regions under roughly comparable conditions

Success clearly attributable to activities implemented

Consistency is achieved when the process is followed

## Replicable

Documentation available, including systematic evaluation

Opportunity to contact institution in charge to exchange information and guidance

**Match desired policy objectives of the ‘Best Practice’ case with the local needs**

# Political Agendas

- Johannesburg Plan of Implementation
- Millennium Development Goals
- Kyoto Protocol - CDM

## International

- Circular Economy Plan
- National Development Plans
- National Sustainable Development Strategies

## National

- Regional development plans
- Regional environmental strategies / action plans
- Neighbouring state/province policies or proposals

## Regional

- Regional spatial (urban / rural) development plans
- Land development programmes

## Local

Which measures are identified or supported by international developments?

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Do national political developments support certain policy instruments?

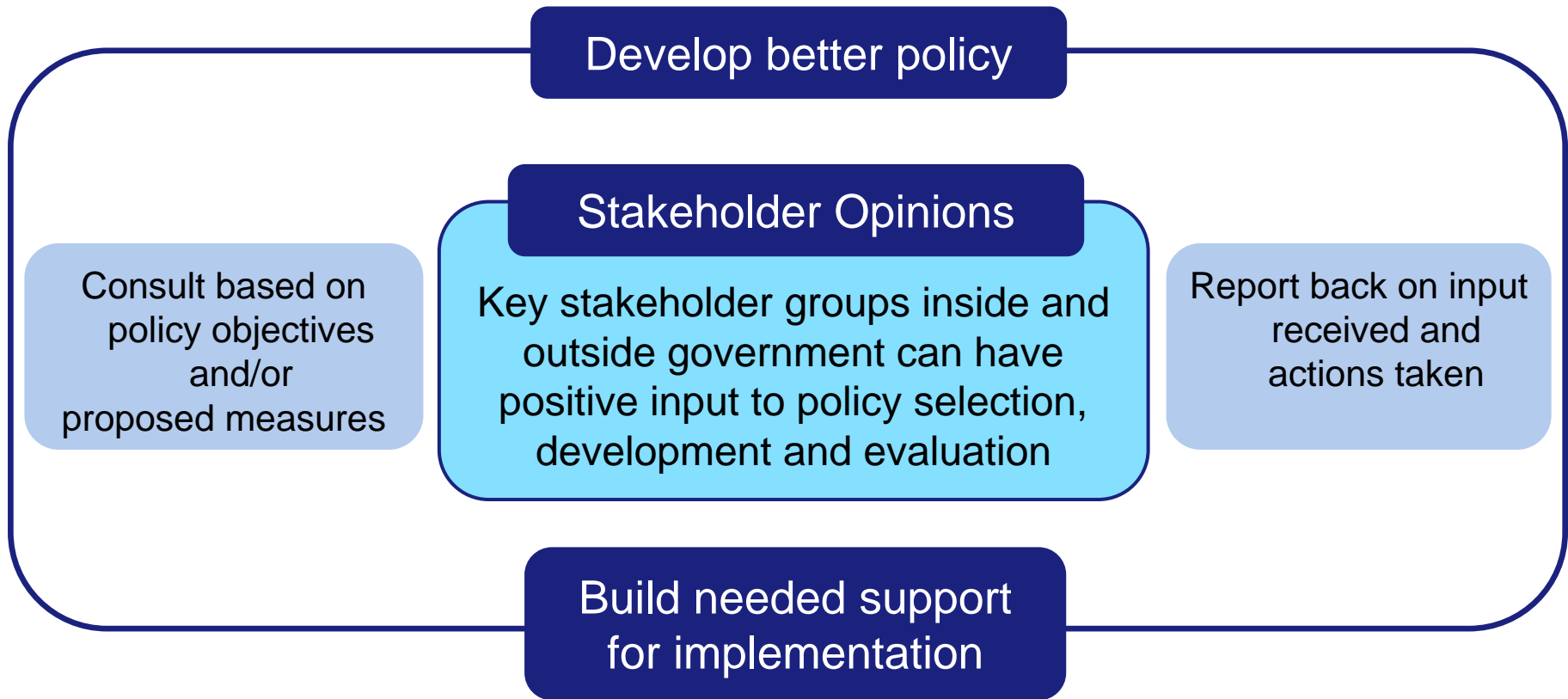
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Do regional political developments support certain policy instruments?

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Do local political developments support certain policy instruments?

# Key stakeholders

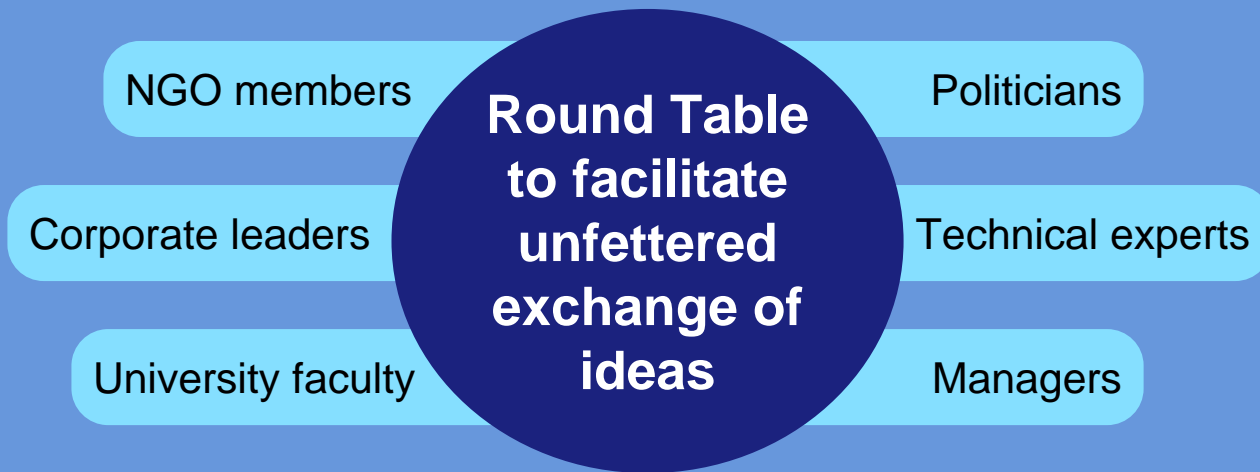


**People support what they help to build**



# National Round Table on the Environment and the Economy

Exploring new opportunities to  
integrate environmental conservation  
and economic development



National Round Table on the  
Environment and the Economy

Canada

Zur Anzeige wird der QuickTime®  
Dekompressor (un)komprimiert?  
benötigt.

# Determining policy options

## Case study: Public Consultation United Kingdom

### Public Consultation

UK Department of Environment,  
Food and Rural Affairs

QuickTime?and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

### Consultation Criteria

1. **Wide consultation** with time to respond.
2. **Clarity about proposals**, who affected and timelines for consultation.
3. Consultation must be **clear, concise and accessible**.
4. **Feedback on responses** and how policy was influenced.
5. Government departments must **monitor the effectiveness** of consultation exercises.
6. **Follow 'Better Regulation' guidelines** of government.

QuickTime?and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

# Determining policy options

## Case study: Public Consultation United Kingdom

### Public Consultation

UK Department of Environment,  
Food and Rural Affairs

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[www.defra.gov.uk/corporate/consult](http://www.defra.gov.uk/corporate/consult)

# Policy reinforcement for Circular Economy

Policy Analysis

Determining Policy Options

Policy Analysis

# Why analyse policy?

## Policy Tradeoffs

Ensure scarce resources of government and society are put to the best use

## Achieve Objectives

Chose the policy options that have the best chances of success

## Build Support

Demonstrate to stakeholders inside and outside government that the selected policy options are optimal

It is important to develop clear criteria for policy analysis that are recognised and supported by decision makers and stakeholders inside and outside government

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

In the following applied to...

### Eco-Industrial Parks

**Definition** A flexibly applied regional industrial initiative often initiated by local governments, to gain ecological and economic benefits by exchanging unneeded resources

### Environmental Agreement (EA) in the Chemical Industry

**Definition** Implementation agreement between government and the chemical industry for emissions and waste reduction. Firms hand in a Company Environmental Plan (CEP) every 4 years. If complying with the criteria, they benefit from a simplified licensing process.

### Policy analysis criteria

Effectiveness  
and efficiency

Equity and  
fairness

Incentives for  
long-run  
improvement

Enforceability

Acceptability in  
the local context

#### Effectiveness and efficiency

##### Effective

- Polluters will respond in ways that achieve desired objectives
- Results can be measured

##### Efficient

- Balance between abatement cost and environmental damages (cost-benefit analysis)

##### Cost-effective

- Achieving objectives at lowest cost. Alternative to cost-benefit analysis

##### Economic impacts, trade and competitiveness

- Short term, medium term, long term

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

### Eco-Industrial Parks

#### Effectiveness

Enables clear and measurable savings



Firms might continue to pollute if no regulation exists

#### Efficiency

Reduction of natural resource usage



Often depend on substantial government funding

### EA in the Chemical Industry

#### Effectiveness

Possibility of flexible planning and simple licensing creates incentive to meet criteria.



Overall environmental goals might not be achieved. Lack of necessary innovation

#### Efficiency

Reduces emissions and waste significantly.



Impact of EA in comparison with other policy instruments can't be measured.



### Policy analysis criteria

Effectiveness  
and efficiency

Equity and  
fairness

Incentives for  
long-run  
improvement

Enforceability

Acceptability in  
the local context

#### Equity and Fairness

##### Equity and fairness

- How benefits and costs are distributed

##### Tradeoffs between efficiency and distribution

- Efficient policy may distribute benefits and costs in ways that are perceived as unfair

##### Social impacts & environmental justice

- Some groups in society may be especially at risk of being subject to greater pollution due to social standing or place of residence
- Employment impacts & opportunities

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

### Eco-Industrial Parks

#### Equity & Fairness: Distribution of Benefits and Costs

Firms participating all mutually benefit from the system



Local stakeholders needs might not be addressed

### EA in the Chemical Industry

#### Equity & Fairness: Distribution of Benefits and Costs

Due to a constant negotiation process, balance between needs and abilities of public and private actors can be found



Due to flexible regulations system, firms may not reduce emissions where greatest need exists

### Policy analysis criteria

Effectiveness  
and efficiency

Equity and  
fairness

Incentives for  
long-run  
improvement

Enforceability

Acceptability in  
the local context

#### Incentives for long-run improvement

##### Incentives

- Policy should provide incentives for continuous innovation in the long term
- Flexibility and results-based regulation is key to enable innovation

##### Policy Certainty

- Provide confidence for effective long term investments in equipment, technology and training

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

### Eco-Industrial Parks

#### Incentives for long-run improvements

System is flexible to changes of method or place  
The longer the coordination, the more cost-effective for the firms



Flexibility allows for declining commitment as well  
Cost effectiveness may come before maximum of resource efficiency

### EA in the Chemical Industry

#### Incentives for long-run improvements

The 4-year Plan (CEP) a firm has to make encourages long term planning



Incentives for long-run improvements depends on results of future negotiation rounds

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

**Enforceability**

Acceptability in the local context

#### **Enforceability**

##### **Compliance monitoring**

- Evaluate monitoring costs for government and for industry under each policy option.

##### **Sanctioning/prosecution costs**

- Cost and complexity of bringing polluters to justice under different policy options.
- Soft enforcement tools.

##### **Paradox of high penalties**

- High penalties create incentives to comply but can make prosecution more difficult.

##### **Feasibility**

- Is it the right time for policy implementation?
- Government capacity to implement and oversee
- Capacity of industry to comply

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

**Enforceability**

Acceptability in the local context

### Eco-Industrial Parks

#### Enforceability

Governments may initiate the system, firms have a (cost) incentive to participate



Monitoring is difficult in the long term. It is up to the firms how they share materials

### EA in the Chemical Industry

#### Enforceability

Firms loose possibility to benefit from the simplified licensing procedure if not complying with agreed upon criteria



Monitoring of customised criteria difficult as no standard procedure exists

### Policy analysis criteria

Effectiveness  
and efficiency

Equity and  
fairness

Incentives for  
long-run  
improvement

Enforceability

Acceptability in  
the local context

#### Acceptability in the local context

##### Moral issues and perceptions

- Beliefs of right and wrong.
- Political acceptability.

##### Policy failure

- Avoid assuming that every proposed policy intervention will improve matters for society as a whole. All policy should be subject to careful objective and rational analysis.

### Policy analysis criteria

Effectiveness and efficiency

Equity and fairness

Incentives for long-run improvement

Enforceability

Acceptability in the local context

### Eco-Industrial Parks

#### Acceptability in the local context

Less pollution and cheaper prices (less resource use)



Local stakeholders can, but are not always actively involved in the process.

### EA in the Chemical Industry

#### Acceptability in the local context

Provincial authorities take part in the negotiation process, so local political acceptability might be high

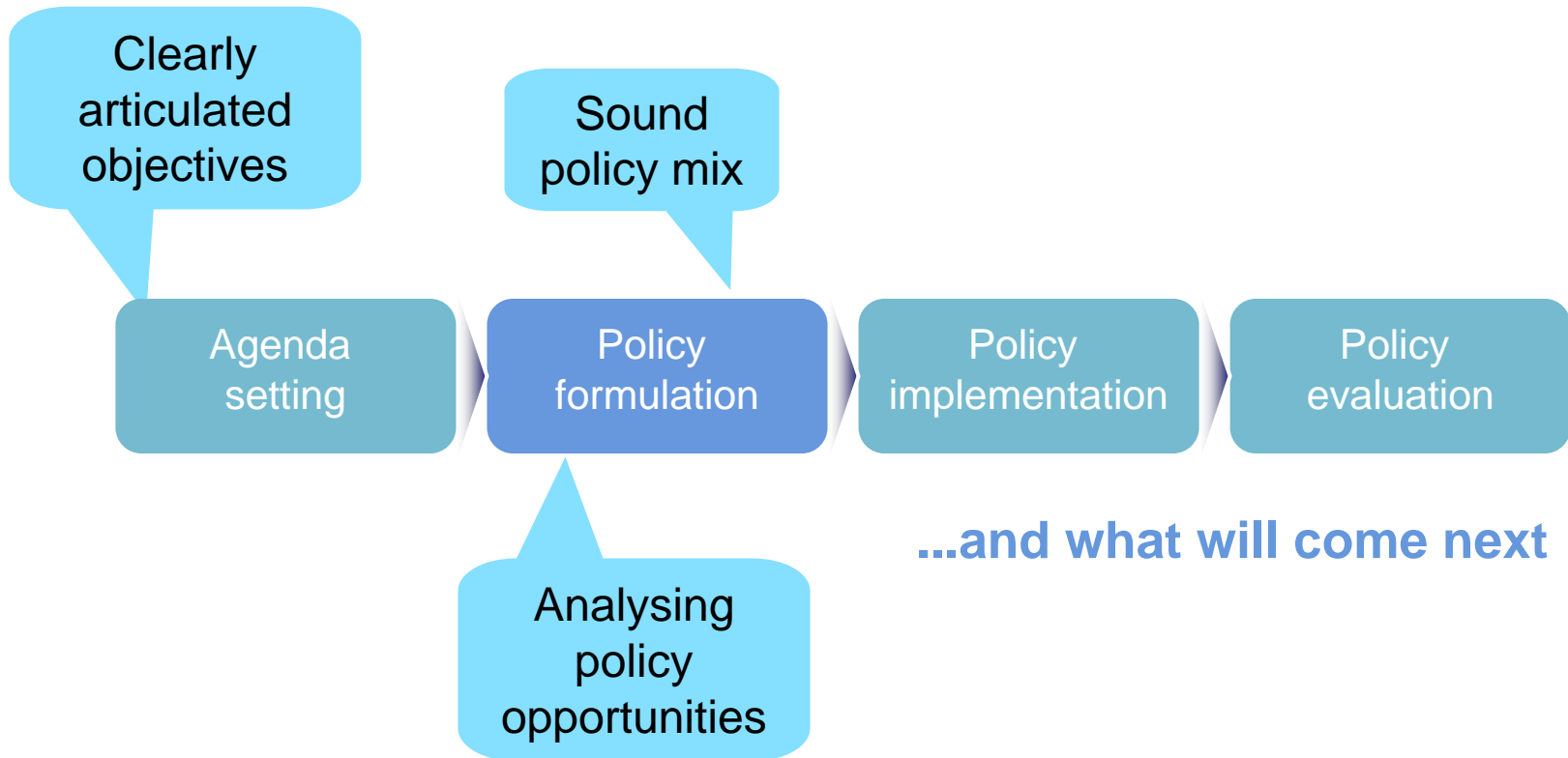


Local stakeholder are not participating directly and hence their beliefs are not taken into consideration



# Navigation...

Progress so far...



# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Implement3

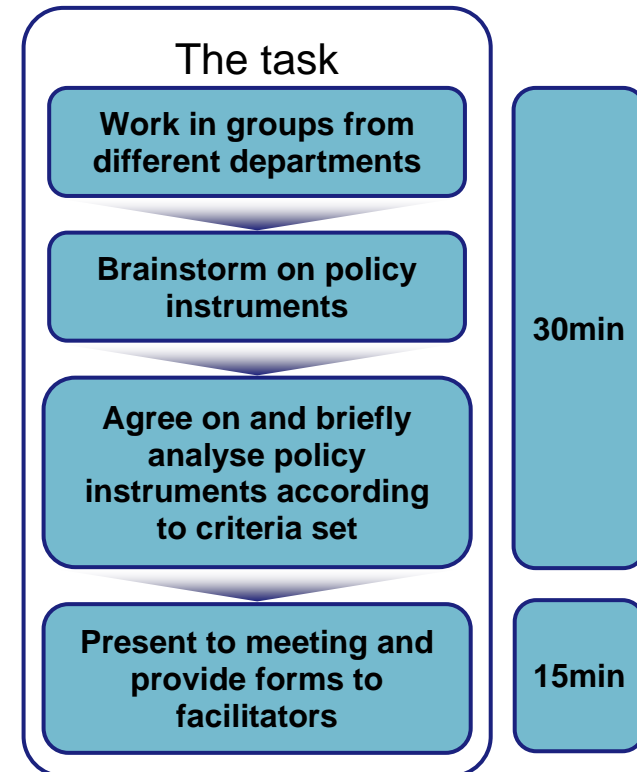
Group Exercise: Analysing Policy Options

# Analysing Policy Options

## Group Exercise

1. Split into the same groups as in the last exercise (Implement2)
2. Brainstorm potential policy instruments to address one of the resource flows analysed in Implement2
3. Select one policy instrument and briefly analyse the proposed policy responses according to the criteria list provided.
4. Present some key results from your analysis to the meeting

### What do we do?



# Group Discussion

Implement3

## Analysing Policy Options

**1. Split into the same groups as in the last exercise (Implement2)**

<b>Sector:</b> (Same as in Implement2)	
<b>Resource Flow:</b> (Select one from exercise in Implement2)	

**2. Brainstorm potential policy instruments to address one of the resource flows analysed in Implement2**

<b>Potential policy instruments:</b> (Brainstorm)	
--	--

### 3. Select one policy instruments and briefly analyse the proposed policy responses according to the criteria list.

<b>Instrument selected:</b>	
<b>Effectiveness and efficiency</b>	
Will the objectives of the policy instrument be achieved?	
Does the instrument allow for costs savings? What might be implications for industry competitiveness?	
<b>Equity and fairness</b>	
Are benefits and costs of the policy distributed in a fair way?	
What is the impact on socially vulnerable groups in society?	
<b>Incentives for long run improvements</b>	
Does the policy provide incentives for continuous innovation?	
<b>Enforceability</b>	
Does government presently have sufficient capacity to implement and oversee the policy?	

<p><b>Does industry have the resources to comply with the policy?</b></p>	
<p><b>Acceptability in local context</b></p>	
<p><b>Do the policy instrument fit to the local mentality and habits?</b></p>	

## 4. Present some key results from your analysis to the meeting

Report back in 30  
Minutes

# Implement4

Implementing the policies: Policy coordination through networks and partnerships



# Challenges in policy implementation

## Overview



## Purpose...

Ensuring that policy instruments are effectively implemented to promote change

### Key issues to consider

- What departments need to cooperate to implement the policy?
- Has money been allocated in each department to handle the new responsibilities?
- What is the timing of each phase of implementation?
- What are the most critical steps and what can be done if there are delays?
- What supporting material is needed (manuals, checklists, information for enforcement staff, information for regulated groups, computer systems etc.)

# Policy reinforcement for Circular Economy

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Challenges in policy  
implementation

Challenges in policy  
implementation

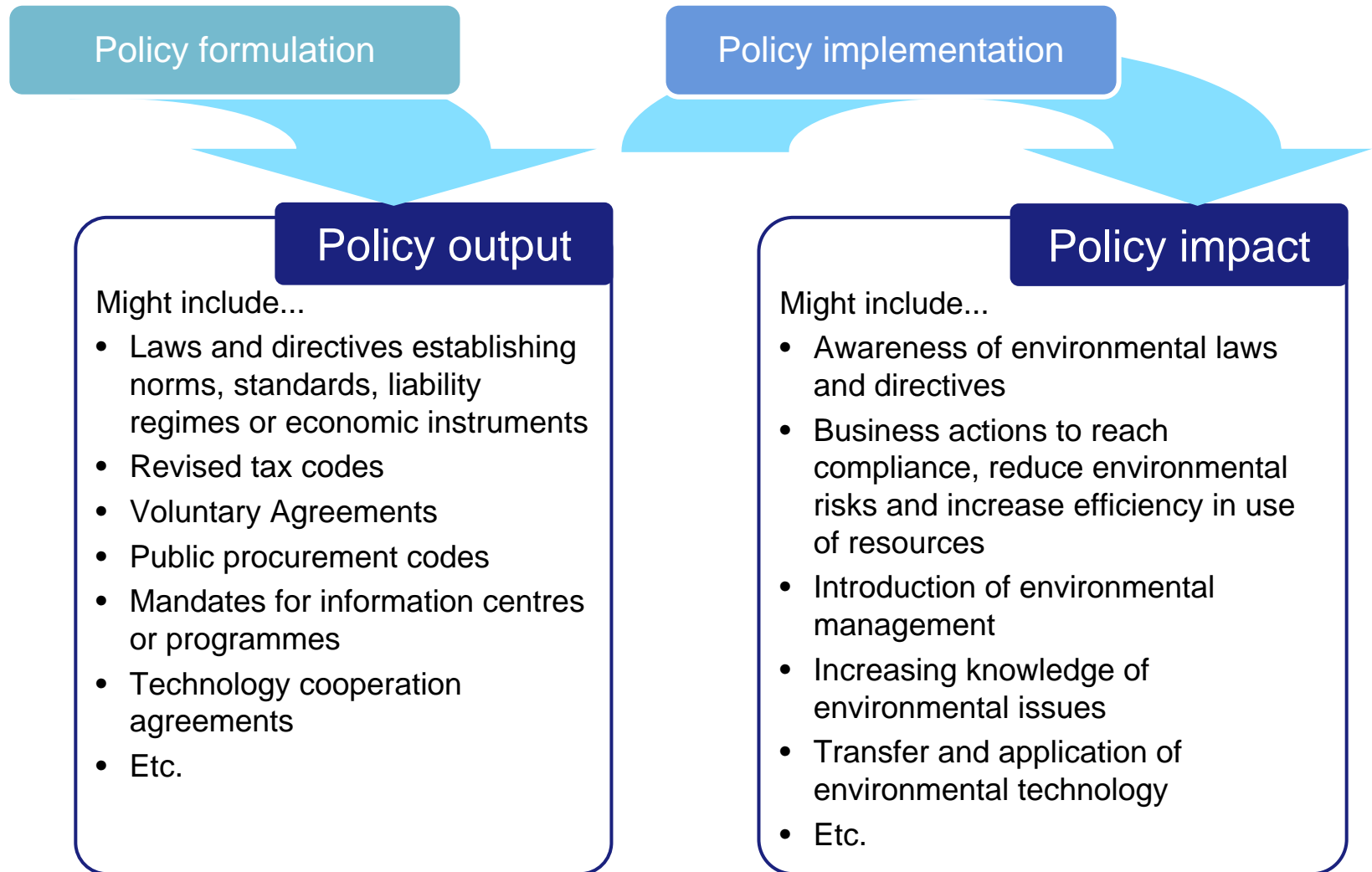
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Opportunities to improve  
policy implementation

---

# Challenges in policy implementation

## From policy output to policy impact



# Challenges in policy implementation

## From policy output to policy impact

# Challenges in policy implementation

### Commitment

- Lack of funding and commitment can hinder implementation and enforcement
- Follow up of programmes difficult when responsibilities are not clearly set

### Coordination

- Uncoordinated policy implementation can hinder effectiveness
- Coordination is especially important where the policy mix involves different agencies

### Capacity

- Public agency might lack capacities to follow up implementation
- Business might lack capacities to adequately respond to implementation of policies

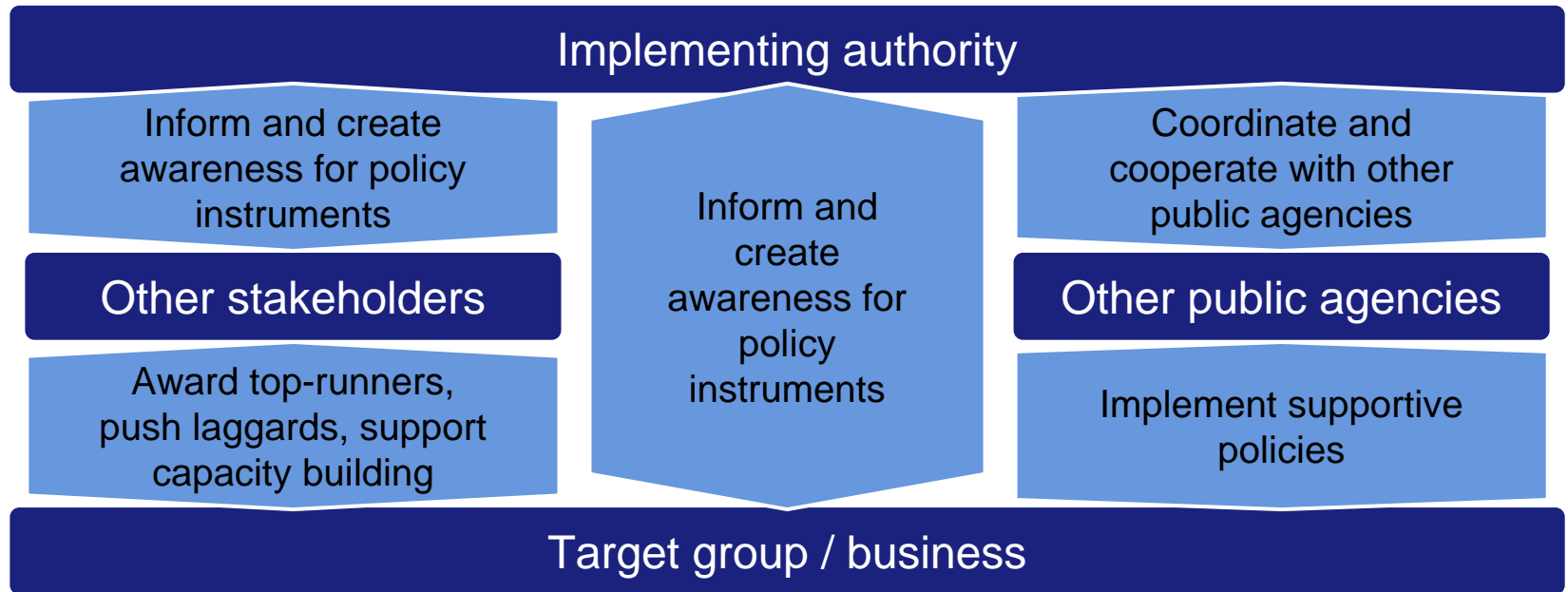
### Corruption

- Enforcement of compliance with regulatory instruments
- Economic instruments might fail, e.g. if collection of taxes is avoided through corruption

# Challenges in policy implementation

## From policy output to policy impact

### Actors involved in policy implementation



# Policy reinforcement for Circular Economy

Challenges in policy  
implementation

Opportunities to improve  
policy implementation

Opportunities to improve  
policy implementation

# Opportunities to improve policy implementation

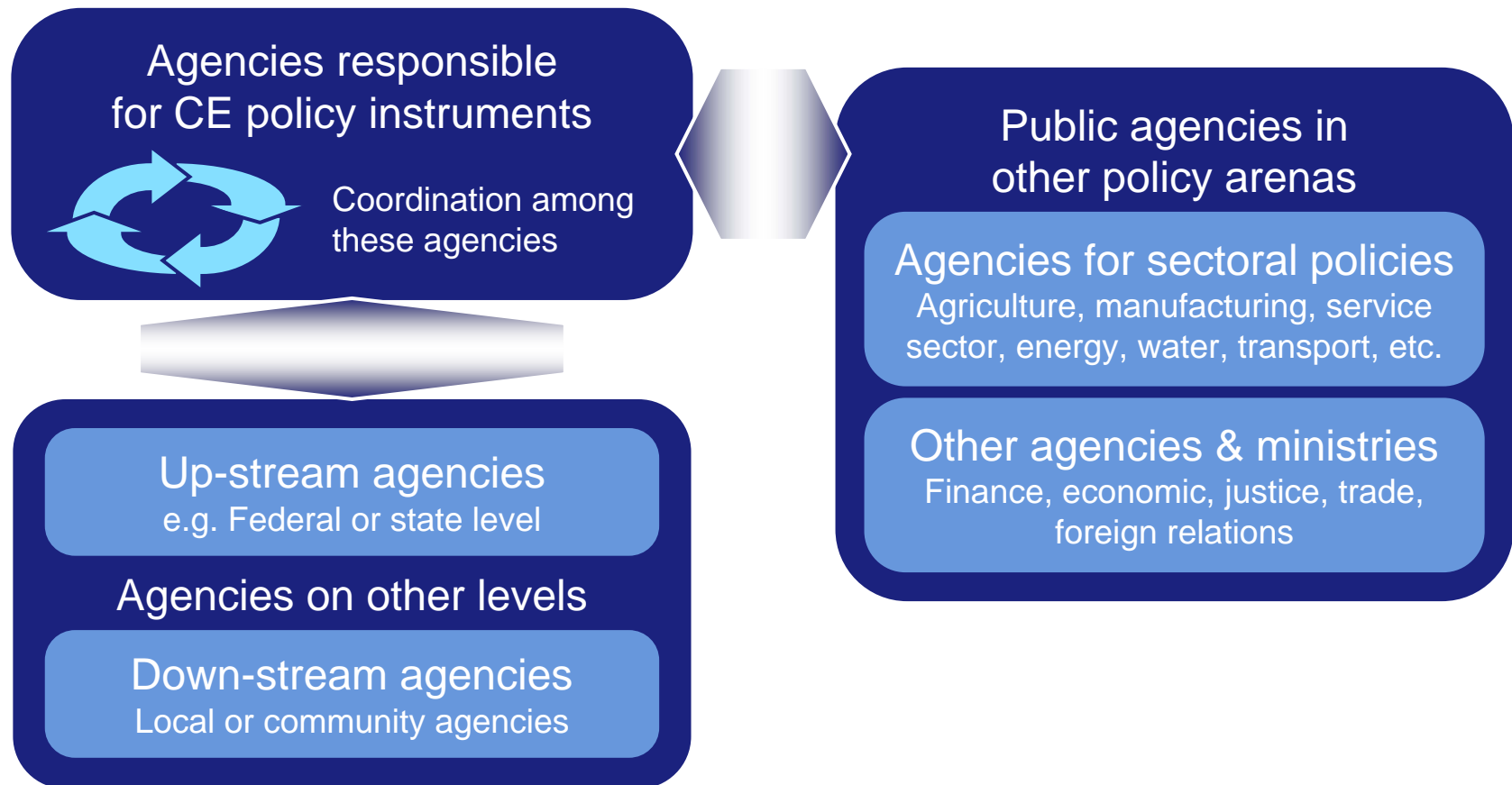
## Overview



# Opportunities to improve policy implementation

## A stakeholder approach to implementing policy

### 1 Inter-agency cooperation and partnership





# Cooperation needed for sound policy making

## Case study: Cooperation between regions

### 1 **BLAG NE**

**BLAG NE**

### Federal-state working group on sustainable development



Coordination body between the state environmental ministries and federal environmental agencies

- Reporting on state level sustainable development strategies
- Developing of common sustainable indicator set for state and federal level
- Organise best practice exchange between local and regional governmental agencies
- Support and coordinate state and federal policy making and implementation

# Opportunities to improve policy implementation

## Case study: information programme for local communities



# 1 Information programme for local and community agencies

## Objectives

Collect and disseminate good examples and experiences from local and regional practice

Demonstrate to local communities the opportunities and chances they gain implementing sustainable development

Use appropriate instruments for providing local communities with new scope for action on sustainability management for town development

Link communal sustainability development to national sustainability strategy

## Products and services

- Strategies, instruments and consultation modules for sustainable local development
- A catalogue of criteria and guidelines for the local Agenda 21
- Lectures and discussions, conferences, seminars, expert talks and workshops
- Offers of qualification
- Conception and editing of articles, brochures, documentation and specialist publications
- Lectures, talks by visiting speakers, presentations

# 1 US-EPA's Federal Facility Compliance Programme



## Aim

Assist other federal facilities to be compliant with national, regional and local US environmental regulation

## Means

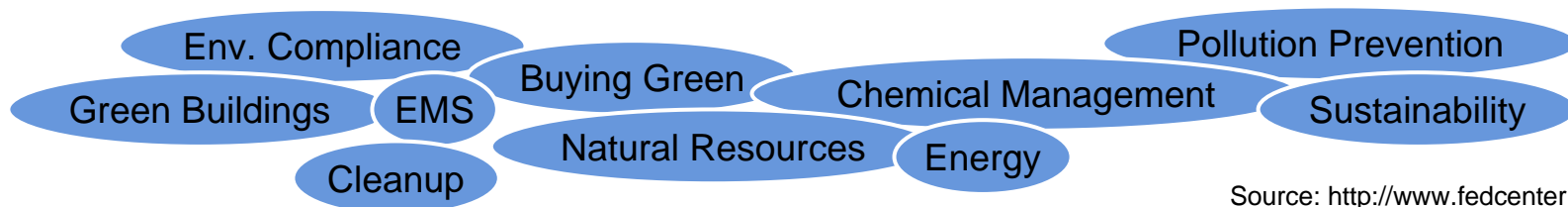
Information directory

EMS training and auditing

Vendor directories for green products

Hotline service

## Programme Areas



Source: <http://www.fedcenter.gov>

### 2 A stakeholder approach to enforcement



Source: Herrndorf 2006: Greening SMEs in developing countries

# Opportunities to improve policy implementation

## Case study: Stakeholder approach to implementing policy


### 2 Auditoría Ambiental

Public authority

Agency responsible for enforcement of environmental regulation in Mexico

QuickTime?and a TIFF (Uncompressed) decompressor are needed to see this picture.

General public



Clean industry seal to demonstrate compliance with laws and best practice to customers and other stakeholders

Consultancy

Works out two-year step by step action plan to reach compliance with environmental regulation by the business to address lack of internal knowledge on relevant legislation

Target business

Improves image in public

Achieves environmental compliance

Source: <http://www.profepa.gob.mx/Profepa/AuditoriaAmbiental/>

### 3 Decentralisation of implementation tasks



More effective implementation, e.g. collection of fees, due to proximity and knowledge of local situation

Better information flow for monitoring of implementation efforts

Experiment locally with different approaches and enable mutual learning and exchange

Show link between policy instruments and environmental improvements on local level

Build long-term local capacity for continuous learning and structural change

### 3 River Basin Committees in Brazil

Water Resource National Council

Federal water agency

Local river basin committees

#### Conservation measures

- Promotion of multiple water uses
- Integrated Environmental Management System
- Experiment with different approaches

#### Collection of user fees

- To demonstrate that water is available only in limited quantity (i.e. not a 'free' good)
- To encourage rational water use
- To obtain funding to finance the programmes in the River Basin Management Plans

#### Status

Charges are already in place in the Paraíba do Sul River Basin and in design in three other basins

Zur Anzeige wird der QuickTime?  
Dekompressor 𠄎 IFF (Unkomprimiert)?  
benötigt.

Source: UNEP: The Use  
of Economic Instruments

### 4 Increasing information flows and transparency

Information and communication technology

Interactive web pages

Online databases

Newsletters

Discussion forums

- Raise awareness about legislation
- Inform about environmental technology & networking opportunities
- Provide forums for peer learning etc.

Producers

Consumers

- Pool information about sustainable products and services available
- Raise awareness to support consumer legislation and protection
- Give consumers a voice



# Opportunities to improve policy implementation

## Case study: Supporting textile producers e-textile – the toolkit

4

An integrated information exchange, communication and learning platform on eco-efficiency in the textile industry

Contacts

Export regulations

Search Function

Awards

e-learning

Online learning and capacity building training tool



e-calendar

Performance measures, tools and management approaches

e-catalogue

Extensive database on practical efficiency measures

Glossary

Case studies

Links

Benchmark

UNESCO-IHE  
Institute for Water Education



Institute for Culture Studies



Science Centre  
North Rhine-Westphalia

Institute of Work and Technology



Wuppertal Institute for Climate, Environment and Energy

e-textile toolbox

# Opportunities to improve policy implementation

## Case study: Encouraging sustainable commuting via Internet

# 4 Commuter Challenge

## Canada's Sustainable Commuting Programme

People are encouraged to use a sustainable mode of transport

During Clean Air Day and Canadian Environment Week people can sign up

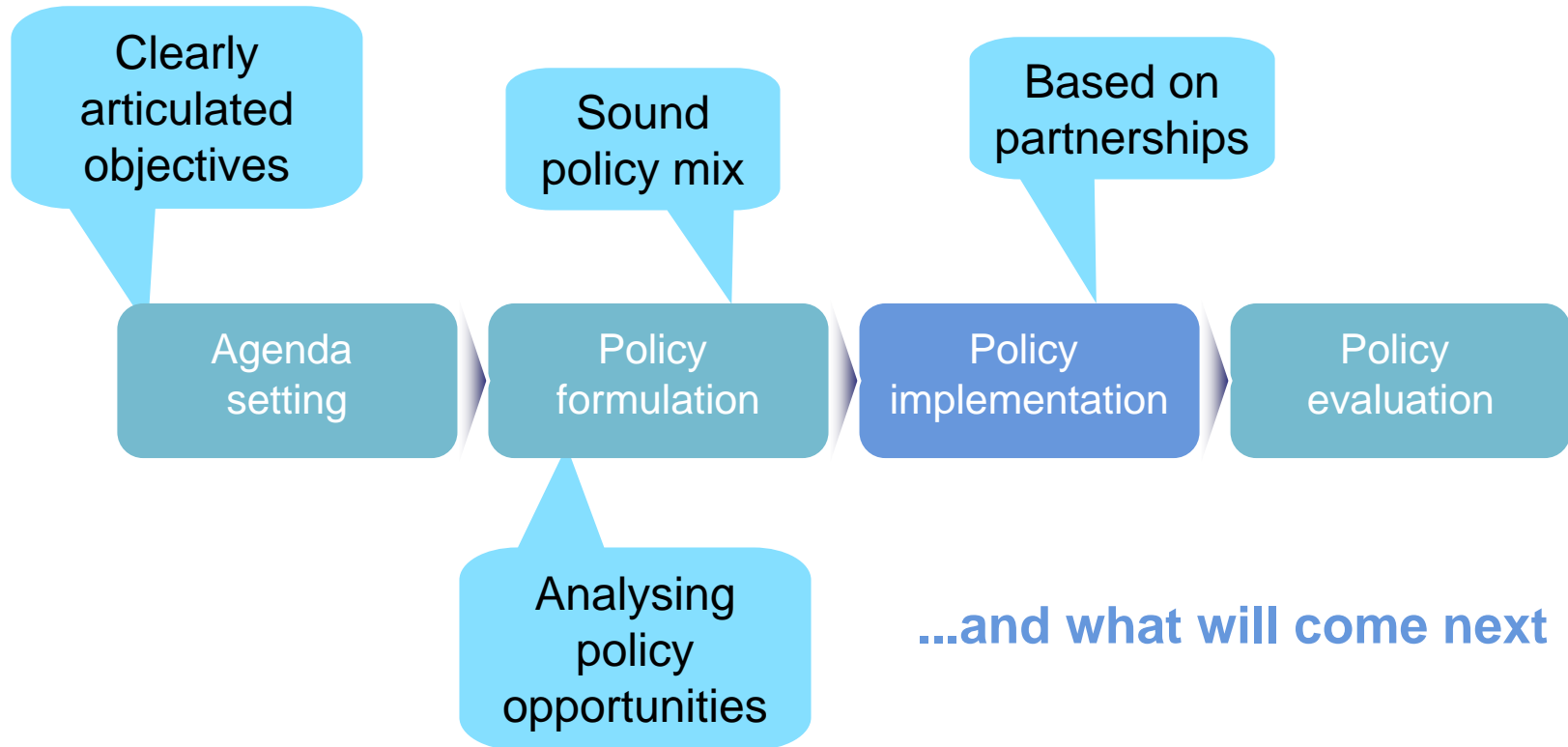
Communities with the highest percentage of participation win

The screenshot shows the homepage of the Commuter Challenge website. At the top, it says "WE CHALLENGE YOU to use your car keys wisely" with the dates "June 4 - 10, 2006". There is a navigation menu with links for "What's the Challenge?", "View Results", "Case Studies", "Partners & Sponsors", "FAQ", and "Contact". Below the navigation, there are several sections: "Step #1 REGISTER", "Step #2 SUBMIT RESULTS" (with a login field and a "Forgot your Password?" link), "Ongoing Challenges" (with a "CLICK HERE TO SEE THE WINNERS FOR COMMUTER CHALLENGE 2006!" link), and a "Have a few minutes? Take our Survey!" button. At the bottom, there is a "Search" box and a brief description of the program: "Commuter Challenge is a national program that aims to increase the awareness of the benefits of sustainable commuting and to encourage Canadians to take action by walking, cycling, taking transit, carpooling or tele-working instead of driving alone to get work." Below this is the text "National Commuter Challenge Event The program is centered on an annual National Commuter".

Source: <http://www.commuterchallenge.ca>

## Navigation...

Progress so far...



# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Implement4

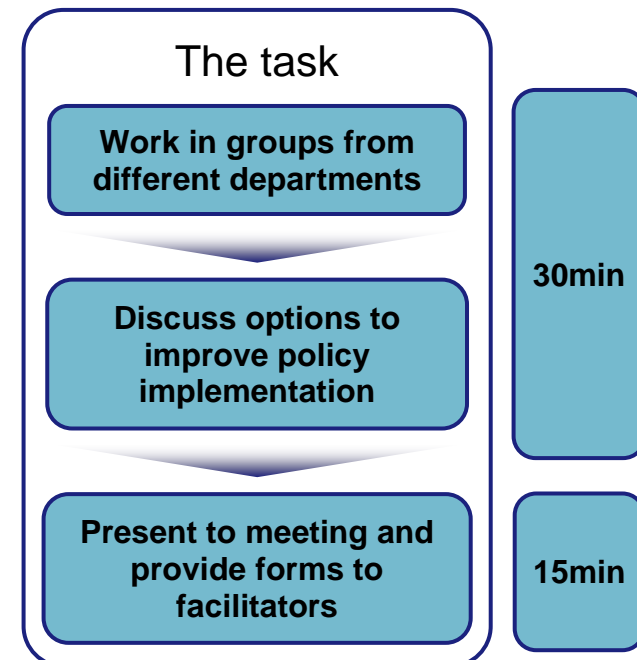
Group Exercise: Analysing Options  
to improve Policy Implementation

### Group Exercise

## Analysing Options to improve Policy Implementation

1. Split into the same groups as in the last exercise (Implement3)
2. Discuss potential options to improve implementation of CE policy instruments, especially considering opportunities for coordination and partnership
3. Present three promising ideas from your discussion to the meeting

### What do we do?



# Group Discussion

Implement4

## Analysing Options to improve Policy Implementation

1. Split into the same groups as in the last exercise (Implement3)

<b>Sector:</b> (Same as in Implement3)	
<b>Resource Flow:</b> (Same as in Implement3)	
<b>Policy instrument(s):</b> (Select from Implement4)	

2. Discuss potential options to improve implementation of CE policy instruments, especially considering opportunities for coordination and partnership

<b>Inter-agency cooperation and partnership</b>	
---	--

<b>A stakeholder approach to enforcement</b>	
<b>Decentralisation of implementation tasks</b>	
<b>Increasing information and transparency</b>	
<b>Others</b>	

**3. Present three promising ideas from your discussion to the meeting**

Report back in 30 Minutes





# Implement5

Following up policy implementation:  
Indicators, evaluation and corrective action

# Bringing the pieces together

## Evaluating policy impacts



## Purpose...

Confirm that policy has been implemented as intended, determine if the desired policy objectives are being achieved and recommend adjustments to the policy mix

### Key issues to consider

- Was the policy mix implemented as intended?
- Are regulated groups responding to the policy measures as desired to achieve the policy objectives? Why or why not?
- Are the policy objectives still valid?
- Are there trends occurring that will affect the policy objectives or policy measures?

### 1. What?

State and Development  
of SCP patterns

Implementation  
of policy  
instruments

Results achieved by  
policy instruments

Indicator and target development

### 2. Why?

Report and  
disseminate  
findings

Decide on  
corrective  
actions

### 3. How?

# Policy reinforcement for Circular Economy

What to monitor

What to monitor

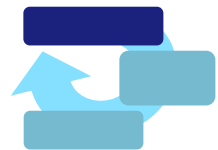
Indicator and target  
development

Monitoring and corrective  
action

Case studies

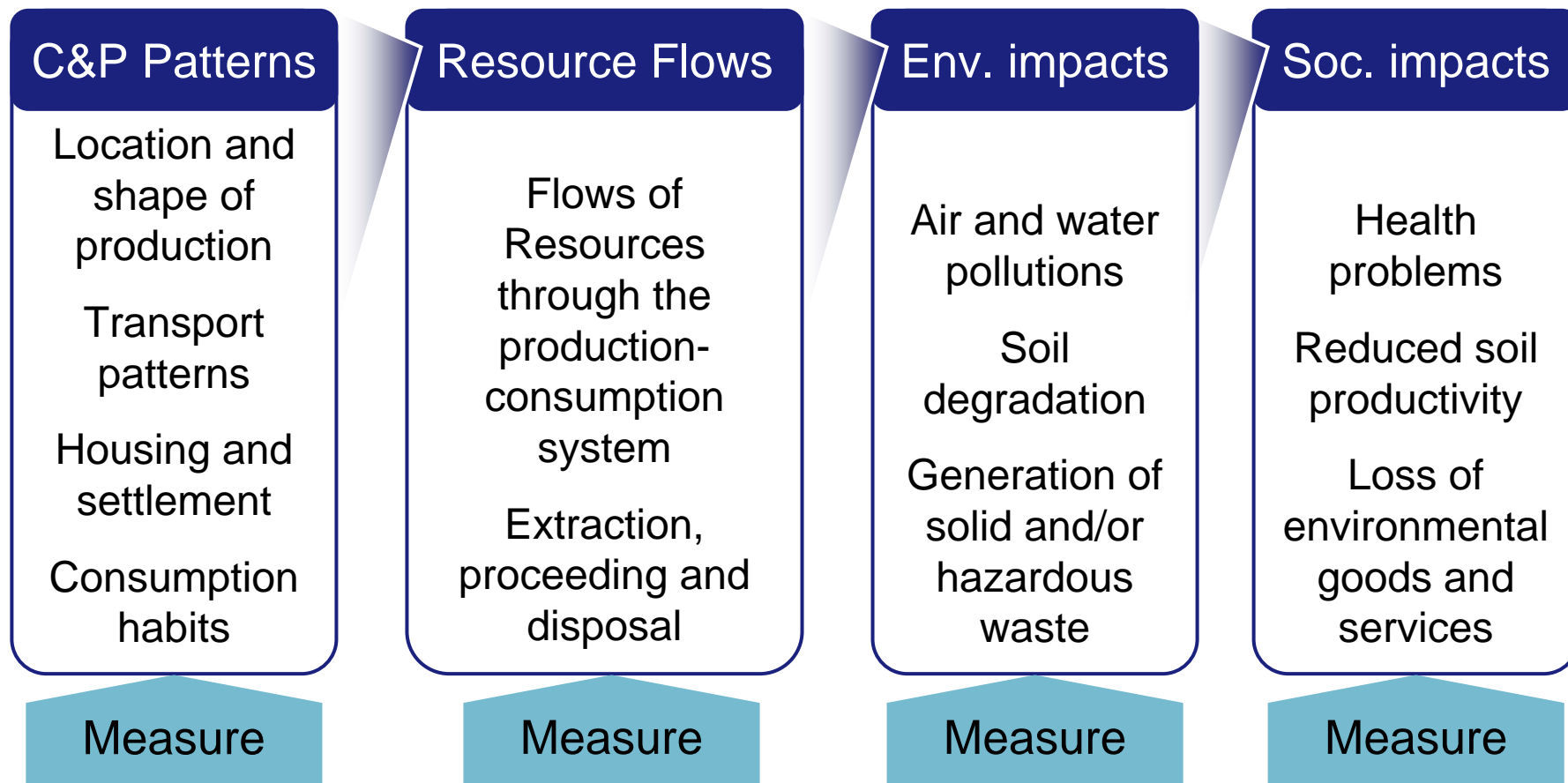
# Monitoring – what and why?

What: State and Development of SCP patterns



## Know your SCP patterns

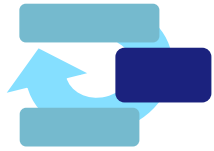
baseline indicators



Adopted from OECD / UNDP 2002

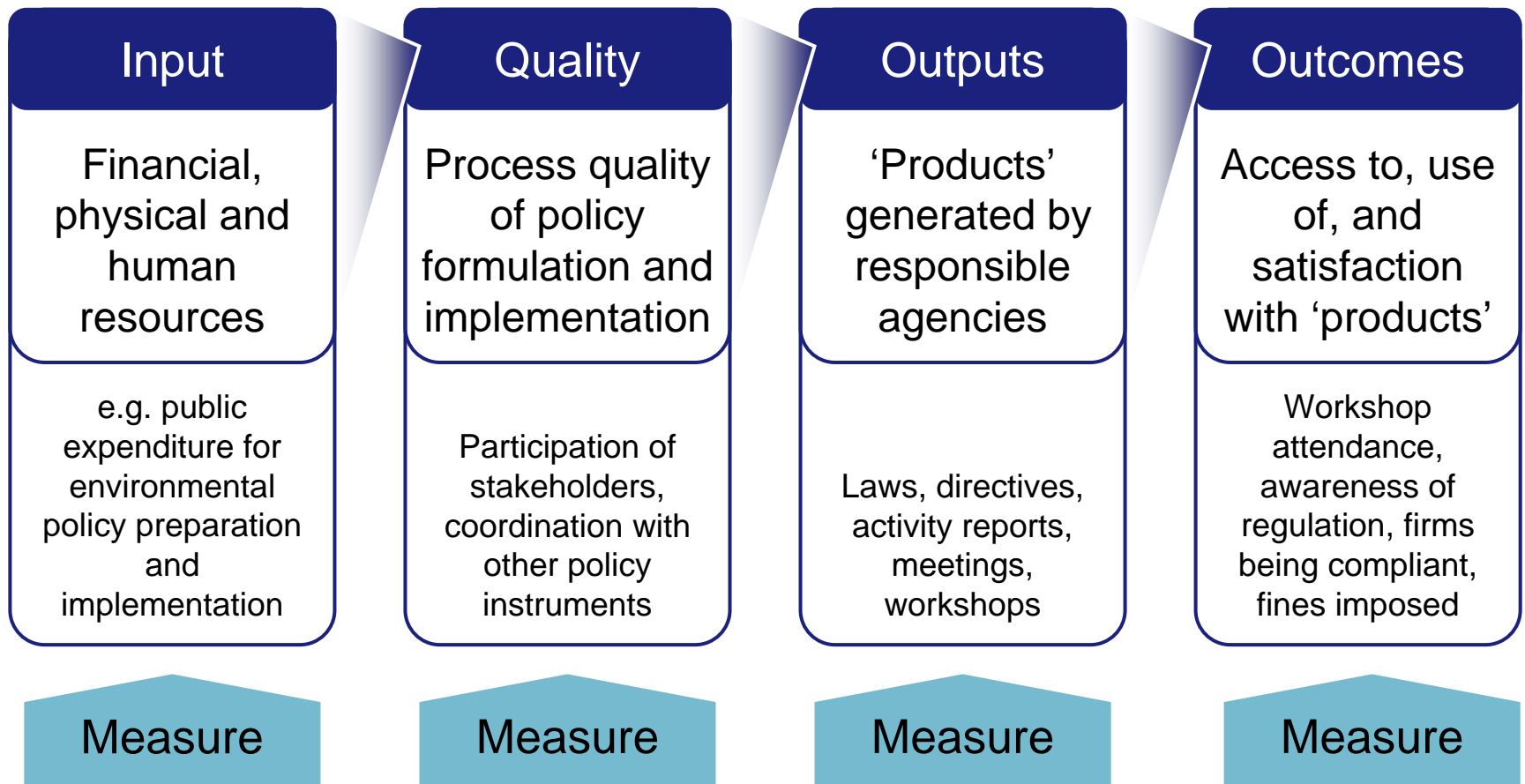
# Monitoring – what and why?

What: Implementation of policy instruments



## What action has been taken?

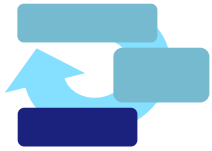
management indicators



Adopted from OECD / UNDP 2002

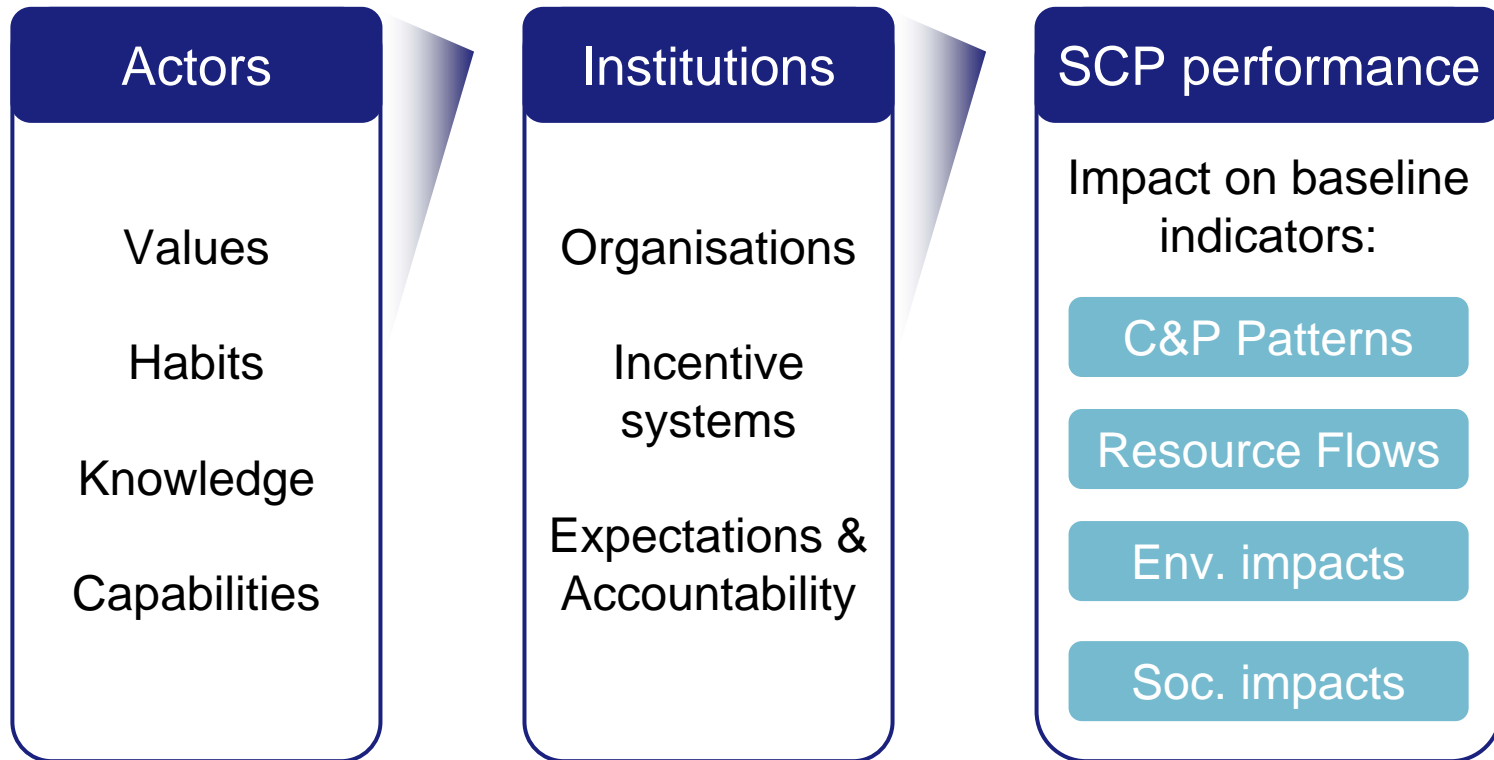
# Monitoring – what and why?

Why: Results achieved by policy instruments



## What results were achieved?

performance indicators



Adopted from OECD / UNDP 2002

# Policy reinforcement for Circular Economy

What to monitor

Indicator and target  
development

Indicator and target  
development

Monitoring and corrective  
action

Case studies



# Indicator and target development

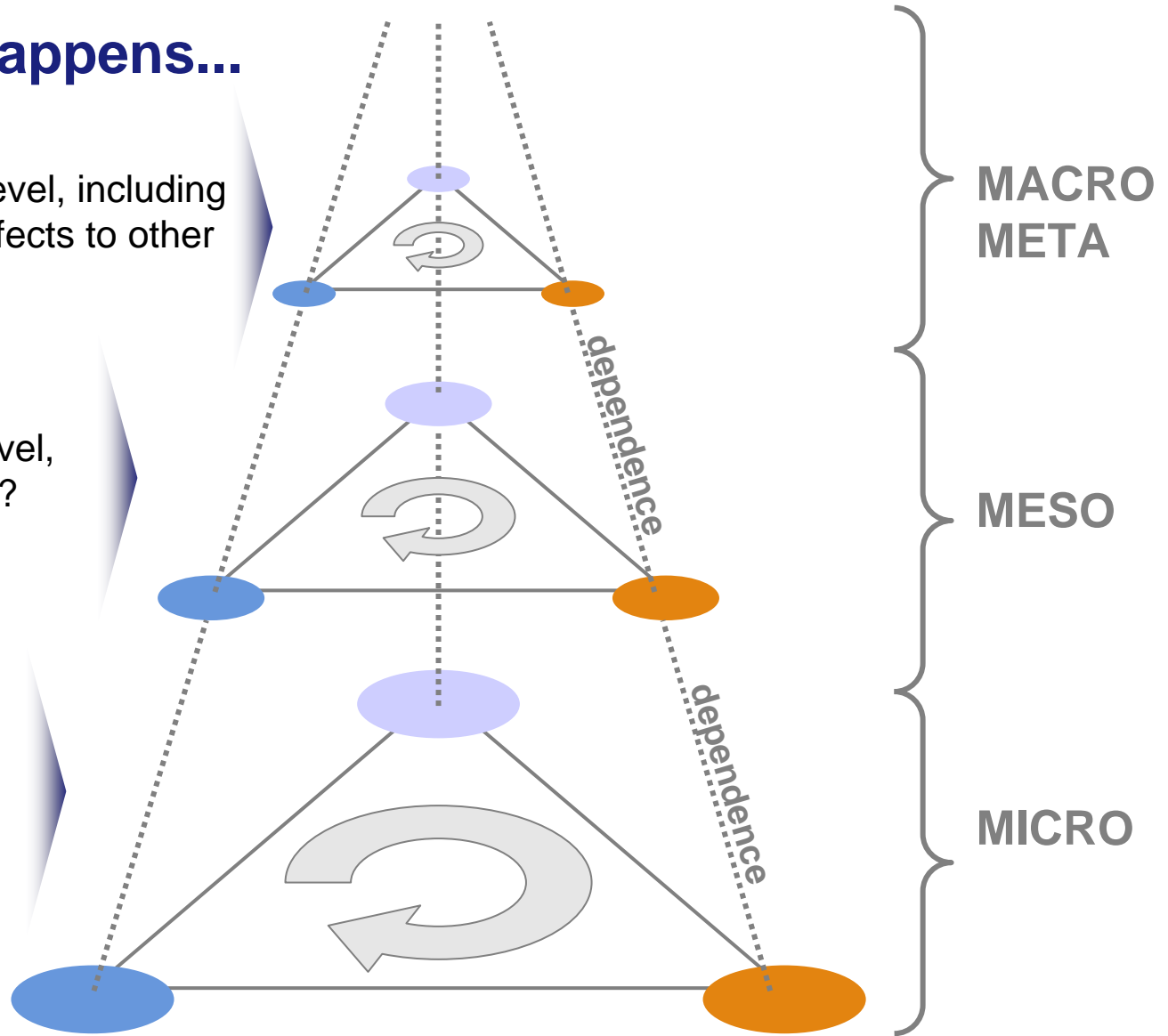
## Measure on all levels

### What change happens...

at country level, including spill-over effects to other countries?

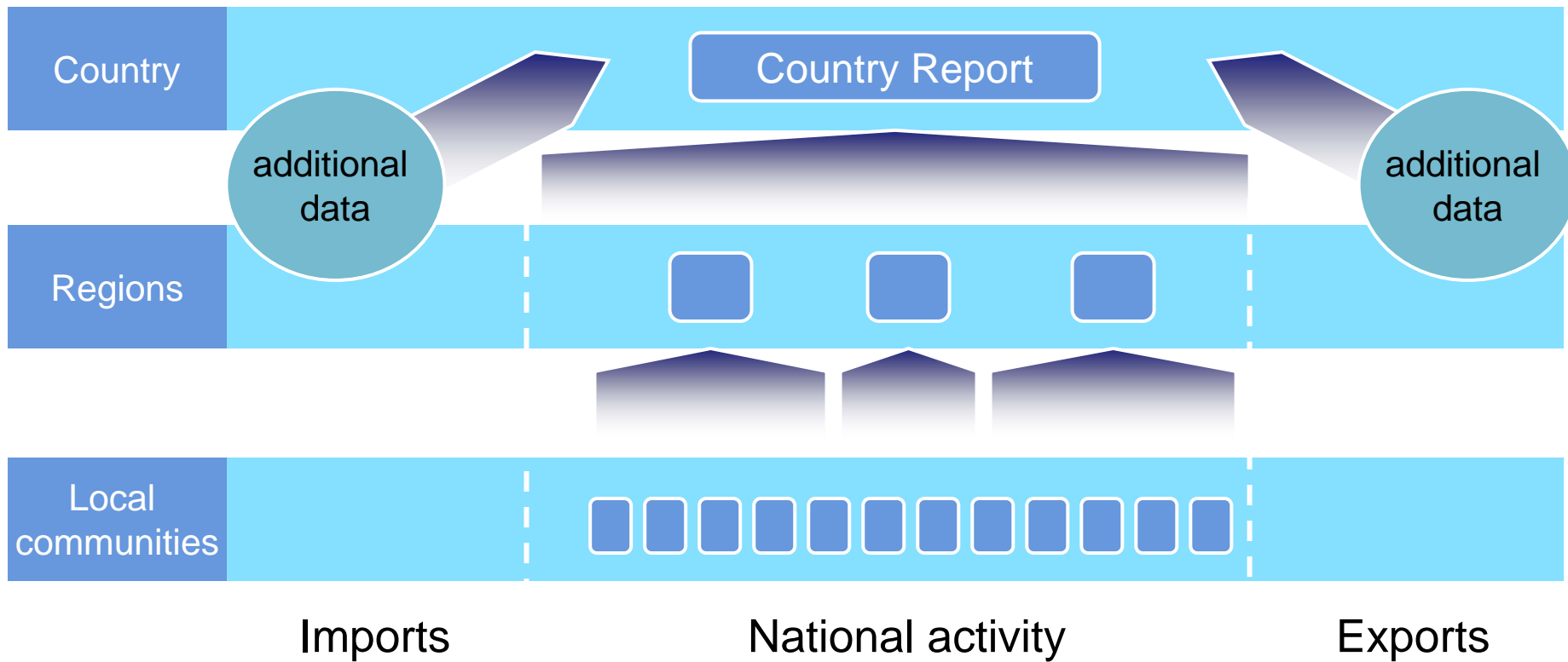
at the regional level, including sectors?

at the local level, including companies and consumers?



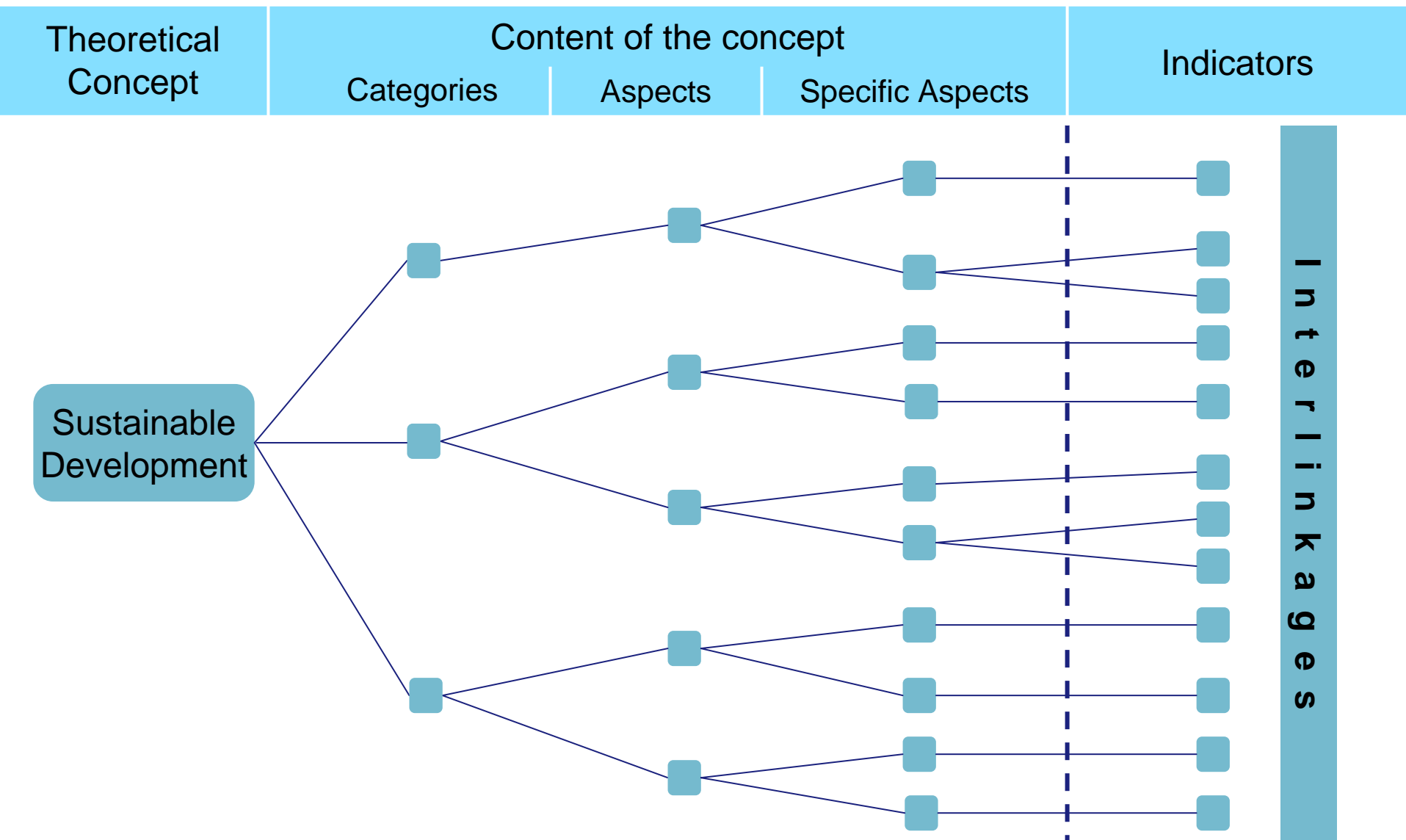
# Indicator and target development

## A framework for SCP monitoring



# Indicator and target development

## From theoretical concepts to indicators



# SMART targets

**Specific:** Set precise objectives

**Measurable:** Set quantifiable objectives

**Ambitious:** Set objectives that imply a significant improvement over status quo

**Realistic:** Consider the resources available to make the objective happen

**Timed:** State a concrete timeline for achieving the objective

# Policy reinforcement for Circular Economy

What to monitor

Indicator and target  
development

Monitoring and corrective  
action

Monitoring and corrective  
action

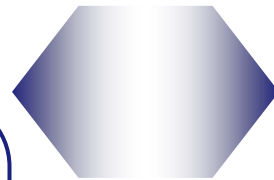
Case studies

# Setting up monitoring system

## Internal monitoring

Responsibilities for

- Formulating indicators and technical protocols
- Collecting and processing data
- Evaluating and interpreting data
- Discussing methodology and results with stakeholders

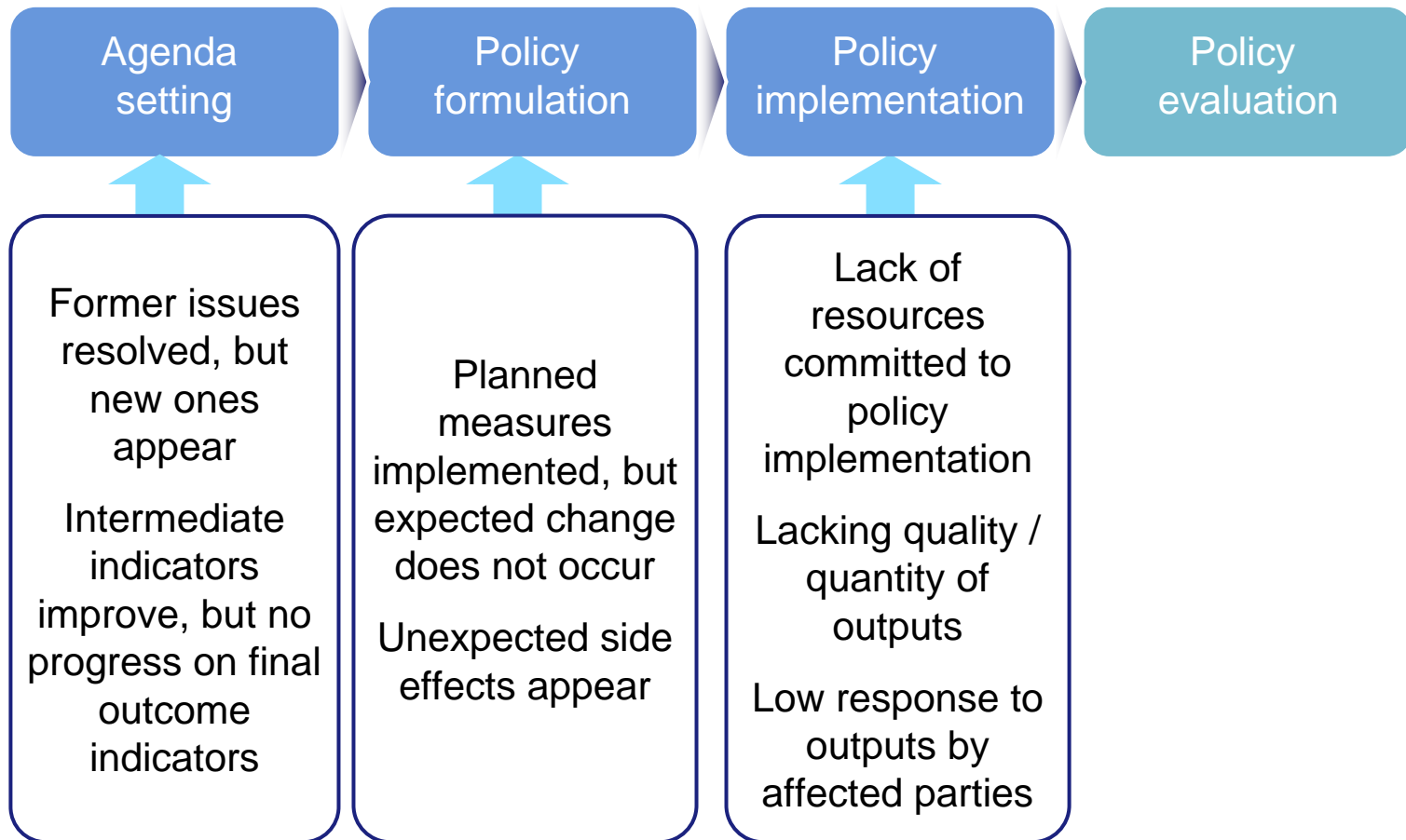


## External monitoring

Responsibilities for

- Verifying indicators, methodology and results yielded
- Providing technical support for data collection
- Scientific support for evaluation and interpretation

# Corrective Action



# Policy reinforcement for Circular Economy

What to monitor

Indicator and target  
development

Monitoring and corrective  
action

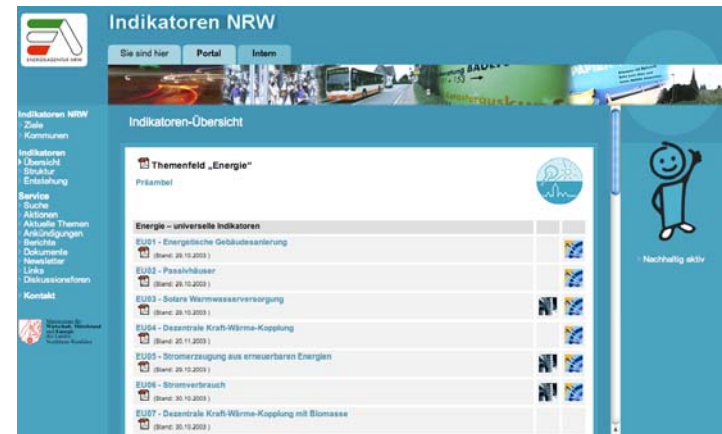
Case studies

Case studies



### ‘NRW Indikatoren’ Benchmarking and sustainability planning portal for local communities

- Common indicator set based on stakeholder dialogue
- Cities can customise and add own indicators
- Data available from state agencies already provided
- Planning tool for setting goals and monitoring progress towards these
- Cities can compare themselves to others (‘benchmarking’)
- About 30 cities participating, including various industrial towns from post-industrial ‘Ruhrgebiet’ area (e.g. Gelsenkirchen, Dortmund)



### Thematic Areas



Energy



Social City



Town Development  
and Resources



Material Flows



# Santa Monica

## Sustainable City Progress Report

- Environmental, social and economic indicators
- Online available on internet platform  
<http://santa-monica.org/epd/scpr/index.htm>

### Improving



Solid Waste  
Ecological Footprint  
Green Construction  
Vehicle Miles Traveled  
Household Hazardous Waste  
Farmers' Markets  
Average Vehicle Ridership  
Vehicle Ownership  
Tree Canopy  
Park Accessibility

### Stable



Energy  
Santa Monica Bay Health  
Livable Housing  
Economic Diversity  
Voter Participation  
Bike Paths  
Bus Ridership  
Open Space  
Housing -Special Needs  
Groups

### Worsening



Cost of Living  
Water Use  
Waste Water  
Affordable Housing  
Jobs/Housing Balance  
Pedestrian/Bike Safety  
Traffic Impact on Emergency

Water as  
priority!

# Case Studies

## Belgium: SCP indicator system

### Methodology

#### Semi-participative co-design

- Stakeholder participation: constant feedback and expert advice
- Collective approach: steering committee



### Indicator set

Indicators for assessing...

Policy implementation

Policy effects

Input

Process

Output

Outcome

Impact

### Examples

Number of companies with a certified eco-management and/or socio-management audit system

Number of cases of labour diseases and accidents

Total Material Requirement (TMR)/ GDP

Source: Heyerick / Mazijn 2004: The need for indicators...

# The European Common Indicators

## Towards a Local Sustainability Profile



Network of cities

Partners



European Environment Agency



World Health Organization  
Regional Office for Europe



SHelter for All  
United Nations Human Settlements Programme



United Nations  
Environment  
Programme

Tested indicator system for cities, including core and additional indicators

Applied by various cities worldwide

Common online reporting platform for benchmarking

'State of Environment (SoE)' reports on local level

Overview of human-induced impact on the environment

State of the environment and current trends

Political responses to these trends

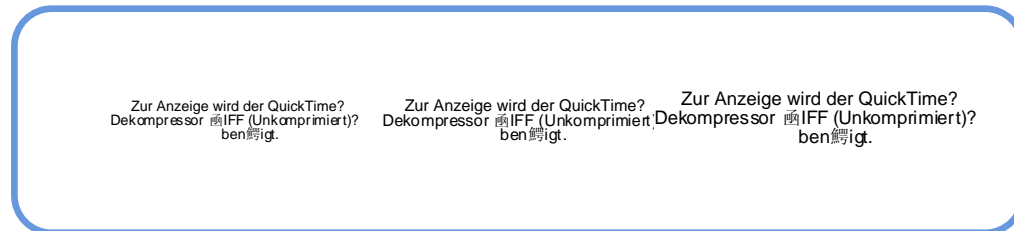
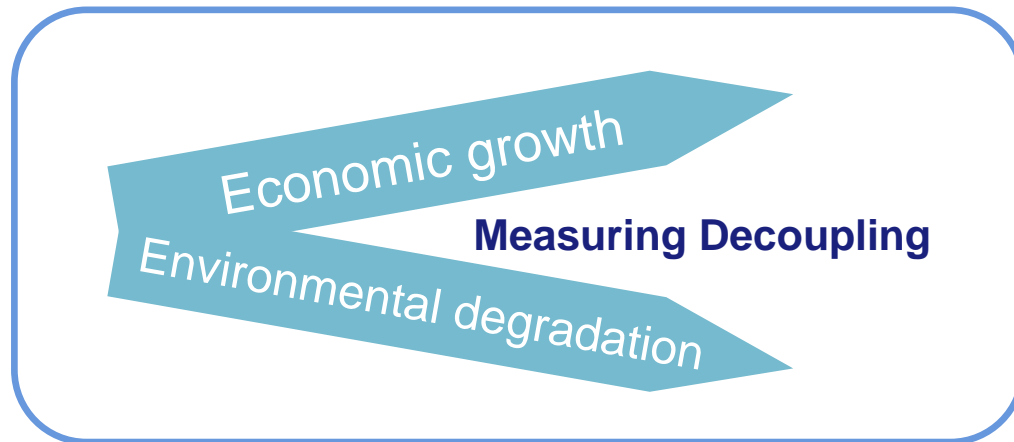
Degree to which these responses have been attained

Comparison between environmental situation in different cities

Source: [www.ceroi.net](http://www.ceroi.net)

# UK

## Sustainable Consumption and Production Indicators



### Basket of 12 indicators

**Economy-wide decoupling indicators**  
(4 indicators, e.g. greenhouse gas emissions)

**Resource use indicators**  
(3 indicators, e.g. Total material use)

**Decoupling indicators for specific sectors**  
(5 indicators, e.g. Agricultural or Manufacturing output)

Source: <http://www.defra.gov.uk/environment/statistics/scp/index.htm>

# Sustainability indicator set for the European Aluminium Industry

QuickTime?and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

## 24 categories 115 indicators

QuickTime?and a  
TIFF (Uncompressed) decompressor  
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# Case Studies

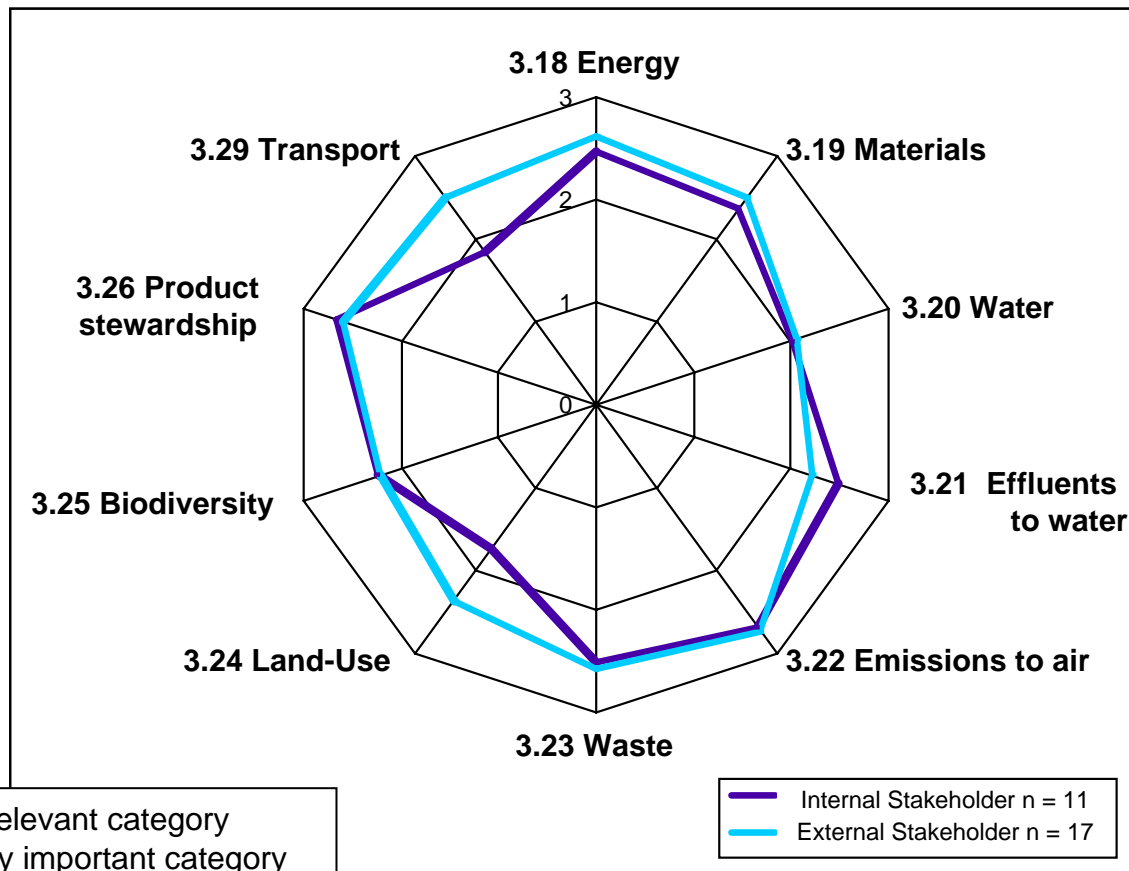
## Sustainability indicator set for the European Aluminium Industry

What information do **internal** and **external** stakeholders expect from the Aluminium Sector?

Environmental

Economic

Social



Index: 0 = not relevant category  
3 = highly important category

Internal Stakeholder n = 11  
External Stakeholder n = 17

# Case Studies

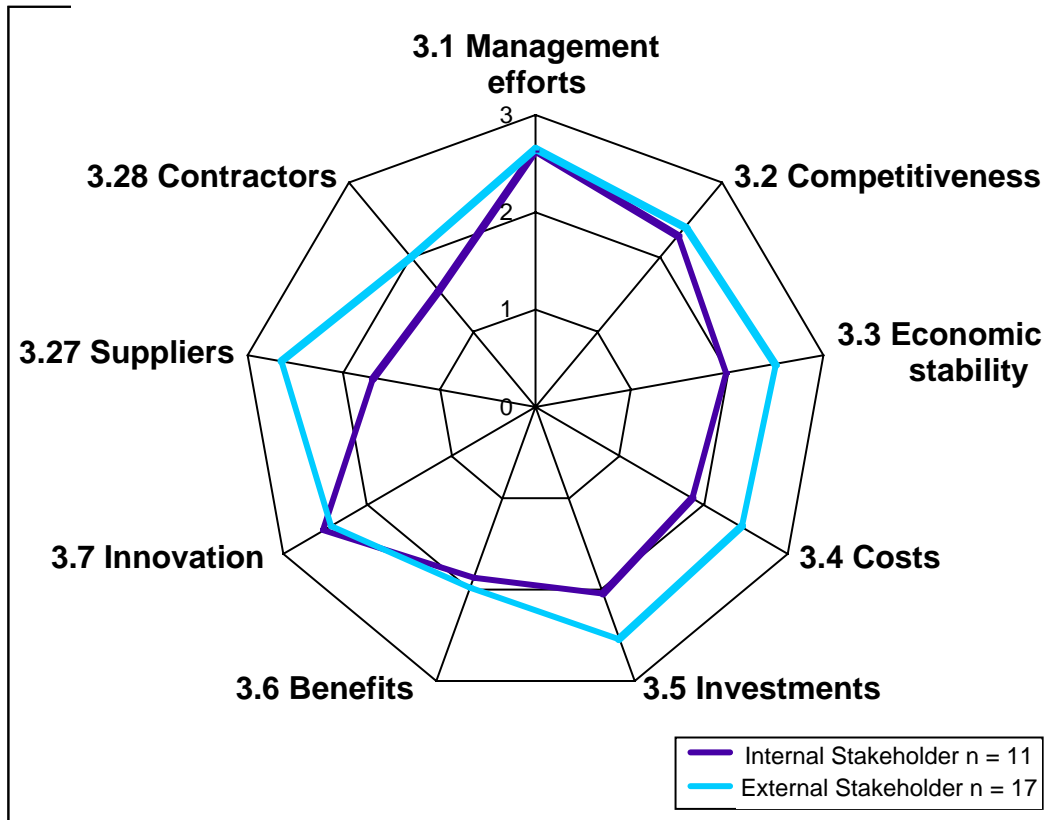
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# Case Studies

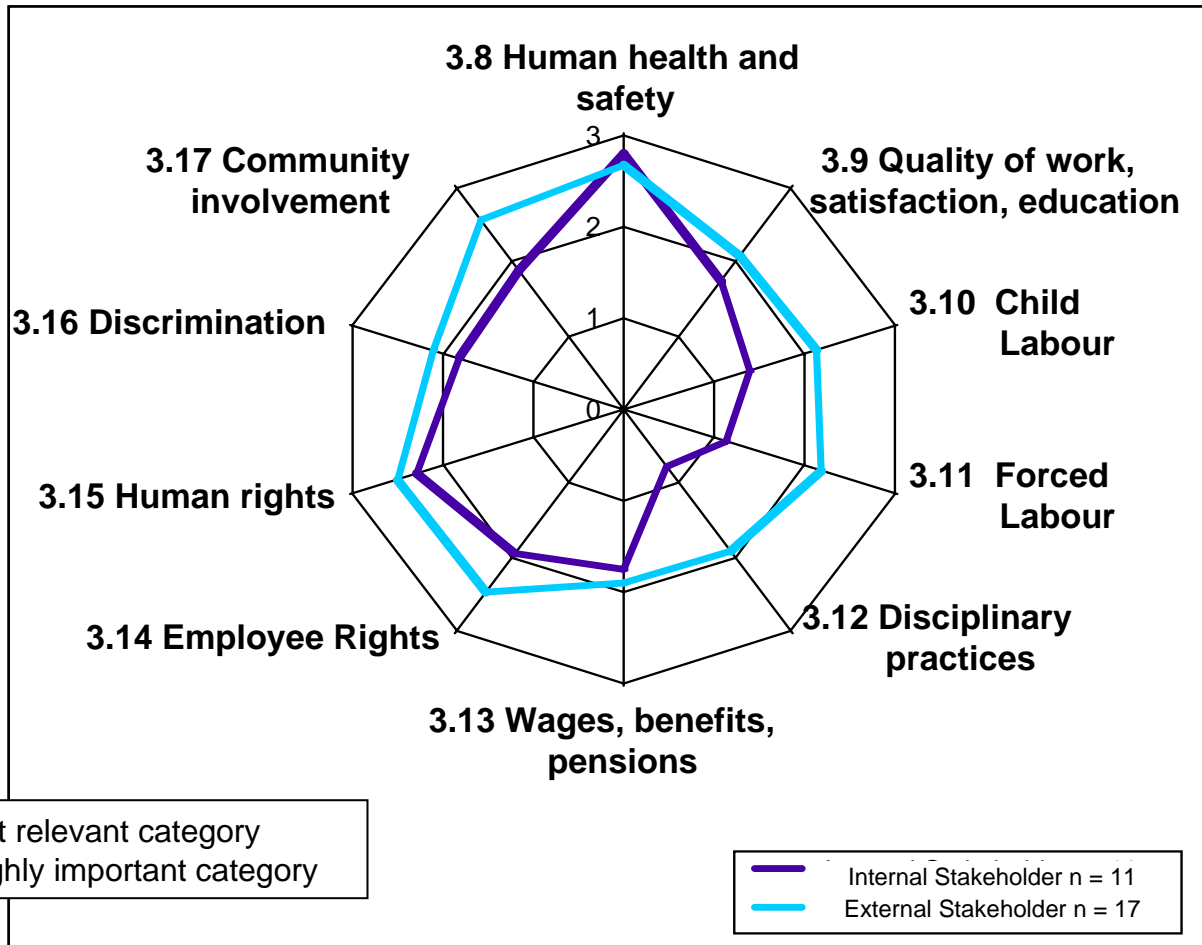
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Environmental

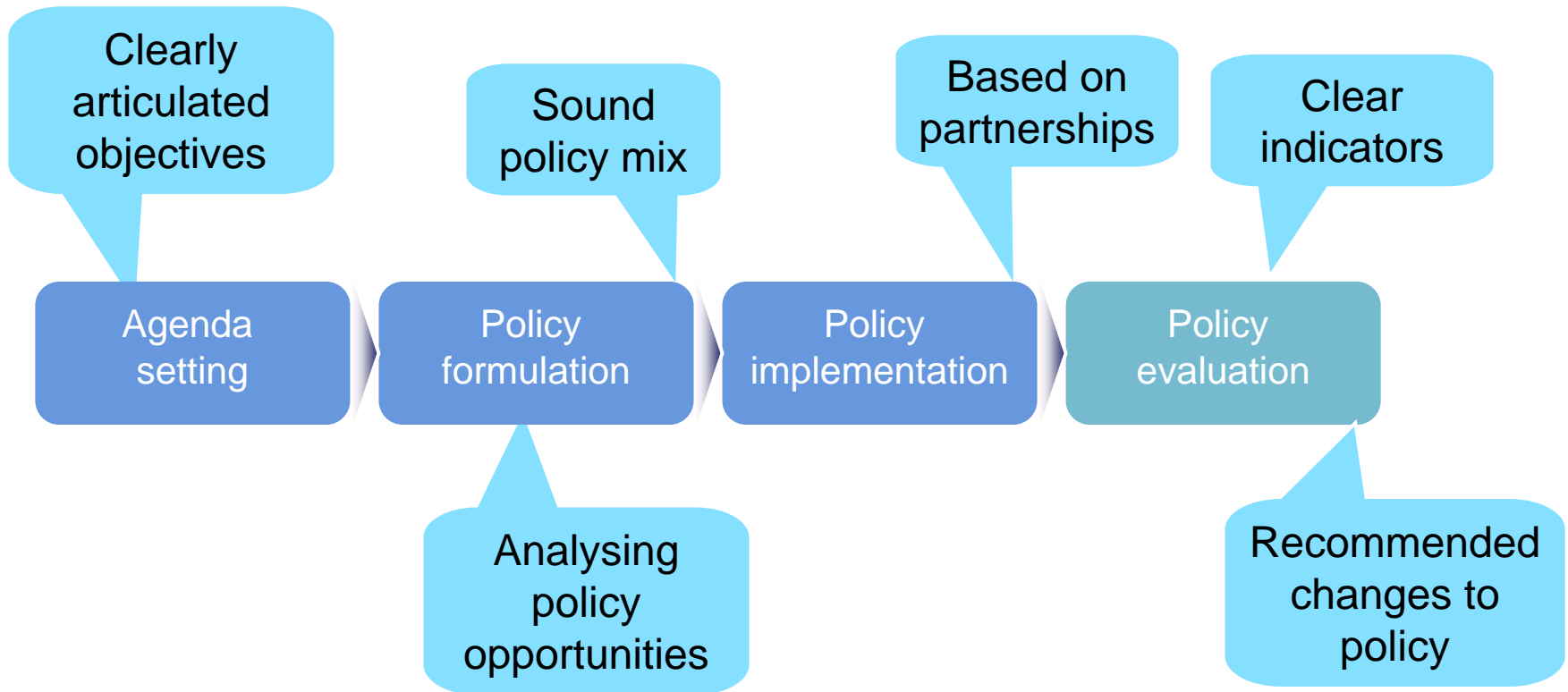
Economic

Social



## Navigation...

Progress so far...



# Policy reinforcement for Circular Economy

**Thank you for your attention !!!**



# Implement5

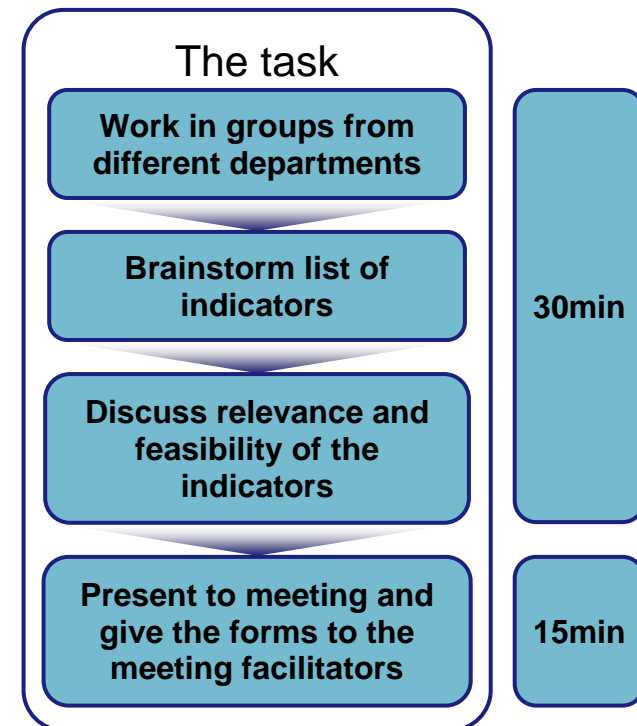
Group Exercise: Brainstorming an Indicator Set for Circular Economy

### Group Exercise

## Develop a draft indicator set

1. Divide into four (or more) groups with participants from a mix of different departments
2. Brainstorm a list of indicators for Circular Economy.
3. Discuss relevance and feasibility of the indicators in the group
4. Presents indicators that were found to be relevant and feasible to the meeting

#### What do we do?



# Group Discussion

Implement5

Develop a draft indicator set

1. Divide into four (or more) groups with participants from a mix of different departments
2. Brainstorm a list of indicators for Circular Economy in your city/region.
3. Discuss relevance and feasibility of the indicators in the group

You can use the following table for collecting and discussing the indicators.

Rate relevance and feasibility as 'high', 'medium' or 'low'

Indicator list	Relevance	Feasibility

Indicator list	Relevance	Feasibility

**4. Present indicators that were found to be relevant and feasible to the meeting.**

Report back in 30 Minutes

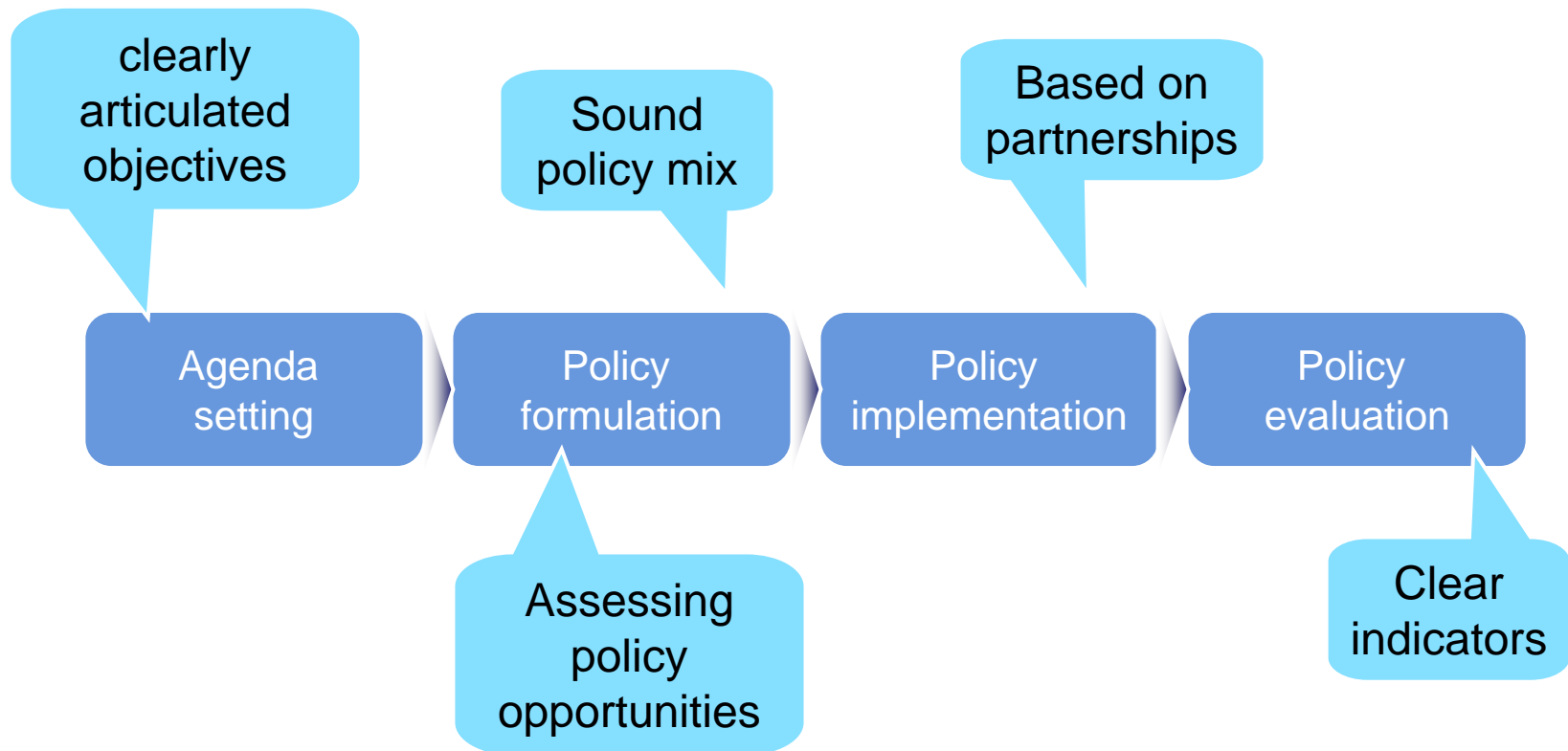


# Implement6

**‘Implementing Circular Economy –  
Methods & Action Steps’**



# Recalling the Policy Cycle...



### Day 3 – Recap

### ‘Implementing Circular Economy -

### Methods & Action Steps’

#### Implement2

**Setting Priorities:  
Analysis of current  
production and  
consumption  
patterns**

#### Implement3

**Assessing Policy  
Opportunities:  
Drafting Policy  
Options**

#### Implement4

**Implementing the  
policies: Policy  
coordinaton through  
networks and  
partnerships**

#### Implement5

**Following up policy  
implementation:  
Indicators,  
evaluation and  
corrective actions**

# Closing

**Closing session and feedback**

Congratulations  
PRODEV training!

Congratulations  
PRODEV training!



# What have we done together?

## Reviewing the three training days

### Day 1

#### ‘Thinking Circular Economy -

Key principles of Circular Economy (CE) and Sustainable Consumption and Production (SCP)  
Creating knowledge and awareness of CE and SCP and exploring the ‘CE/SCP way of thinking’

### Day 2

#### ‘Promoting Circular Economy

Overview on key measures, instruments and strategies that policy makers can apply to build a sound and successful framework for Circular Economy and sustainable consumption and production patterns

### Day 3

#### Implementing Circular Economy -

Key methods and guiding action steps for policy makers helping to make CE and SCP happen  
Setting Priorities - Assessing Policy Opportunities - Planning the Actions - Implementing the policy package

# Participation certificate

- Participants receive a certificate of participation
- Based on regular and active participation and provision of feedback form

Zur Anzeige wird der QuickTime?  
Dekompressor benötigt?  
benötigt.

- Continuous and active participation
- Attendance 3 days
- Provision of feedback form

# We want your opinion!

- We want to continuously improve our service
- Your feedback is important to us
- Please fill in the questionnaires provided and hand in to a facilitator or send by fax to + 49 . 202 - 45958 . 31
- Be sincere and open: What did you like, what didn't you like?

# Thank you!