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Green Economy in Eastern Partner Countries

RECP legacy as stepping stone for circular economy

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UNIDO Senior technical advisor

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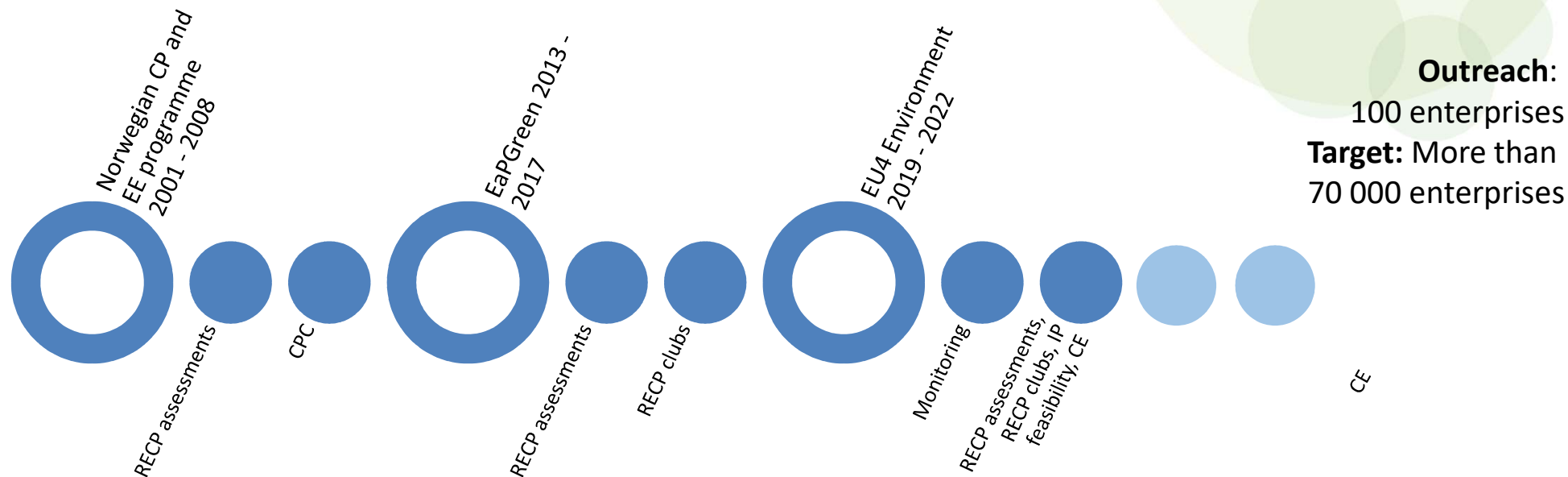




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The RECP balance sheet in Armenia



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Results monitoring 2015 - 2023

	No	Company	Sector	POTENTIAL SAVINGS							Emissions (t CO2-eq.)	No. of implemented	Investment (EUR)	Savings (EUR/yr)
				No. of recommended	Investment (EUR)	Savings (EUR/yr)	Payback (years)	Energy (kwh/yr)	Fuel (m3/yr)	Water (m3/yr)				
EAP GREEN COMPANIES	1	ARARAT-CHANSIN	road building	8	837 000	193 394	4,31	7 212 532			1895,00	7	828280	193 394
	2	ELBAT	vehicle batteries and accumulators	7	320 000	104 341	3,07	72 000					202000	81550
	3	GALIK LLC	construction	9	34 550	17 743	1,95	231078					1050	16 181
	4	ASHTARAK	food production	10	219 823	69 833	3,15	198 000					180	8 380
	5	LUKASHIN	consumer cooperative	14	4 400	1400	3,14	33 000						1470
	6	LUSIA FOOD COMPANY	catering and fresh food production	8	6 180	945	6,54	9 200						145
	7	ROZFRUD LLC	jams, preserves, marinades, juices	14	44 600	5 982	7,46	90 579						13 732
	8	Kavashen LLC	Production of slate	8	41000	8400	4,88	93 333						7 926
	9	Sam Har	Preserve production	16	7 800	7 545	1,03	50 720						7 949
	10	Aminashogh	bakery and cake production	10	48 900	5 770	8,47	66 400						5 217
	10		TOTAL	104	1 564 253	415 953		8 116 842					229 400	336 004

2022/2023

Savings:
8 000 000 kWh of energy
10 000 m³ water
400 t materials

	No	Company	Sector	POTENTIAL SAVINGS							Emissions (t CO2-eq.)	No. of implemented	Investment (EUR)	Savings (EUR/yr)
				No. of recommended	Investment (EUR)	Savings (EUR/yr)	Payback (years)	Energy (kwh/yr)	Fuel (m3/yr)	Water (m3/yr)				
DEMONSTRATION COMPANIES	1	"Magnon" CJSC	Metal products (playgrounds, sport grounds, fitness equipment)	5	62 900	34 790		126 710						
	2	"Sevani Ishkhan" (CJSC)	Freshwater aquaculture	2	450	5763		0		63				
	3	"Sevan Aqua" (CJSC)	Aquaculture	2	27125	22952		0		271				
	4	"Vazgen Abgaryan" LLC	Paper recycling / production of hygiene paper	3	350	3030		61680	6000	0				
	5	"GOS" CJSC	Fish farming	3	311463	29080		121384						
	6	"Juliana" furniture	Furniture production	4	13380	1691,2		12635	0	0				
	7	Hayk Plast	Metal production (metal structures, doors, metal-plastic windows)	2	500	4000		10	0	0				
	8	"Kara & Karen" LLC	Dairy products and probiotics											
	9	"M. Sisyakyan" Ltd (Spitak branch of Gloria sewing)	Apparel (textile, outsourcing sewing services)	2	25030	6000		72000	0	0				
	10	ERPIN Agricultural Cooperative	Dairy products (11 types of cheese)	3	77000	53500		95	100	1100				
	11	"SIS-ALP" LLC	Dairy products (cheese, milk, kefir, butter, sour cream, matsun/yogurt)	2	57000	37500		95	100	1000				
	12	UNIGROUP	Plastic products	2	6050	36001,5		20600	0	0				
	13	Bnakat	Dairy production	3	173000	138400		198900						
	14	Greenhouse	Vegetable and greens production											
	15	Snekarm	Production of snack (dried fruits, corn chips)											
	15		TOTAL	33	754 848	432 708		614 109		3 543 600	290 969		293 504	1 155

	No	Company	Sector	POTENTIAL SAVINGS										Emissions (t CO2-eq.)	No. of implemented	Investment	Savings
				No. of recommended	Investment	Savings	Payback	Energy (kwh/yr)	Fuel (m3/yr)	Water	Materials	Wastewater	Waste				



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Business cases

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Advancing resource efficient and cleaner production in Armenia

The RECP methodology

Resource Efficient and Cleaner Production (RECP) is the integrated and continuous application of preventive environmental strategies to **processes, products, and services** to increase efficiency, reduce risks to humans and the environment. RECP is all about producing with fewer resources while minimizing environmental impacts and increasing overall productivity. For **Small and Medium-Sized Enterprises (SMEs)**, the RECP methodology can effectively lower production costs whilst improving SMEs' competitive advantage and applying environmentally friendly practices. RECP is also an effective tool to introduce and promote Circular Economy principles among SMEs.

"ERPIN" AGRICULTURAL COOPERATIVE - DAIRY PRODUCTION



Company overview
Location: Yelpin
Key products: cheese
No. of employees: 7-11
Main markets: Armenia, Russia, the USA
Exportation quota (%): 35
Founding year: 2017
Certifications: HACCP

"Erpin" is a dairy producer from the Yelpin community of Vayots Dzor. The company was founded in 2017 by president of the agricultural cooperation, Mr. Arur Nazaryan, who also provided the land and infrastructure. In addition to being specialised in cheese production (11 types), the company also shows great potential for expanding production to other dairy products, such as yoghurts, protein powder, and dry food for animals. The production process is based on the locally available inputs (milk and fine herbs). The company's main challenges are the excess waste (wastewater and solid residuals) from cheese production, which are disposed of in the precipitation basins without any treatment, as well as energy efficiency (as production is based on using gas, liquefied petroleum gas (LPG), and electricity from the grid). Motivated to minimise waste and the high energy costs, the company participated in the RECP Demonstration Project under EU4Environment (2019-2024). This publication shows the company's experience reported after the monitoring exercise conducted in 2022-2023.

BENEFITS



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"SIS ALP" LTD - DAIRY PRODUCTION



Company overview
Location: Sisian
Key products: dairy products
No. of employees: 11-15
Main markets: Armenia, Russia
Exportation quota (%): 25
Founding year: 2007
Certifications: ISO 22000/HACCP (in progress)

"Sis Alp" was established by its current executive director Husik Sepeyan in 2007, on the premise of the previously state-owned factory "Sisian Kat". The executive director also provided the space needed for the production area and infrastructure. The company specialises in the production of six types of dairy (cheese, bottled milk, kefir, matsun, butter, and curd), and 33 sub-categories, with the potential to further expand its goods to fruit milshakes, protein powder, and animal food from residuals. The main challenge the enterprise is facing is the excess wastewater and residuals from cheese production, which are not properly stored or recycled. Motivated to address the waste issue and improve its production, the company participated in the RECP Demonstration Project under EU4Environment (2019-2024). This publication shows the company's experience reported after the monitoring exercise conducted in 2022-2023.

BENEFITS



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Advancing resource efficient and cleaner production in Armenia

-The RECP methodology-

Resource Efficient and Cleaner Production (RECP) is the integrated and continuous application of preventive environmental strategies to **processes, products, and services** to increase efficiency and reduce risks to humans and the environment. RECP is all about producing with fewer resources while minimizing environmental impacts and increasing overall productivity. For **Small and Medium-Sized Enterprises (SMEs)**, the RECP methodology is an effective instrument to lower production costs whilst improving the SMEs' competitive advantage and applying environmentally friendly practices.

ELBAT CJSC

-Manufacture of batteries and accumulators for vehicles-

Company overview
Address: 37/29 Shant str., 0043, Yerevan
Key products: Wide range of vehicle batteries
No. employees: 52
Main markets: Armenia
Export quota (%): N/A
Founding year: 2007
Certifications: ISO 14001:2004, ISO 9001:2008



"ELBAT" CJSC is a leading producer of high-quality lead-acid batteries. The company offers a wide range of batteries for cars and commercial vehicles between 40-100 A/H and 120-200 A/H, and provides technical services to select the best battery option for its clients. The enterprise's annual production is around 15,000 batteries. Motivated to improve its environmental performance and reduce resource usage (materials, water, energy) the company joined EAP GREEN in 2017. The programme aims to improve ELBAT's environmental management system (EMS), whose objectives include minimizing the impact of the production systems on the environment, and mitigating risks to people. Thanks to EAP GREEN, RECP is now a well-understood concept within ELBAT, and it is used to improve the company's performance, part of its EMS. This publication shows the company's experience reported after the monitoring exercise conducted in 2021, four years after the programme ended.

Following the project's suggestions, among others, we decided to reuse the hot water which resulted from battery production. By upgrading the cooling system to recover water and heat, we have been able to reuse and save the water that had been previously flushed into the sewage, said **Ashot Payyan, Production Manager**.

Benefits

- Implementation of 5/7 RECP options (plus housekeeping rules to improve general energy efficiency)
- Total economic savings of \$1,550 EUR/year
- General payback period of 2.5 years
- Reduction of resource consumption per battery unit: Electricity: 2% | Natural gas: 4% | Water: 16%
- Reduction of waste generation per battery unit of lead: 11%
- Emission reduction of 10 tonnes of CO₂-eq/year
- Improved occupational health and safety measures (due to better energy and waste management)
- Contribution to better environmental performance (framework of ELBAT's EMS)

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81 % of
recommendations
(2017) are
implemented

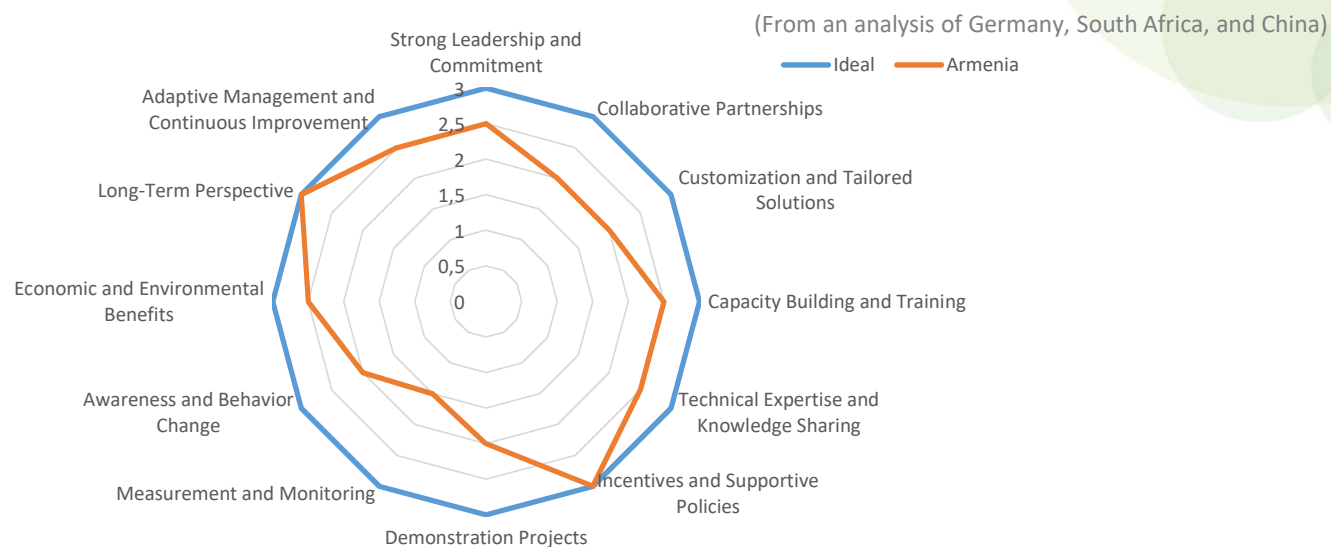


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„RECP/CE readiness index“



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RECP as stepping stone for CE

- The circularity mapping suggests combining strategies of RECP and CE to improve manufacturing's resource efficiency— both at early stages, where materials are formed, and later stages, where products are created.
- Gains in material efficiency, which narrow flows, should be ingrained in these early stages: cutting yield losses involves making the most of technological advances to get more from less.
- This involves product design for longevity, recycling, digitalisation (sensors, control, machine learning and artificial intelligence), and automation including robotics.

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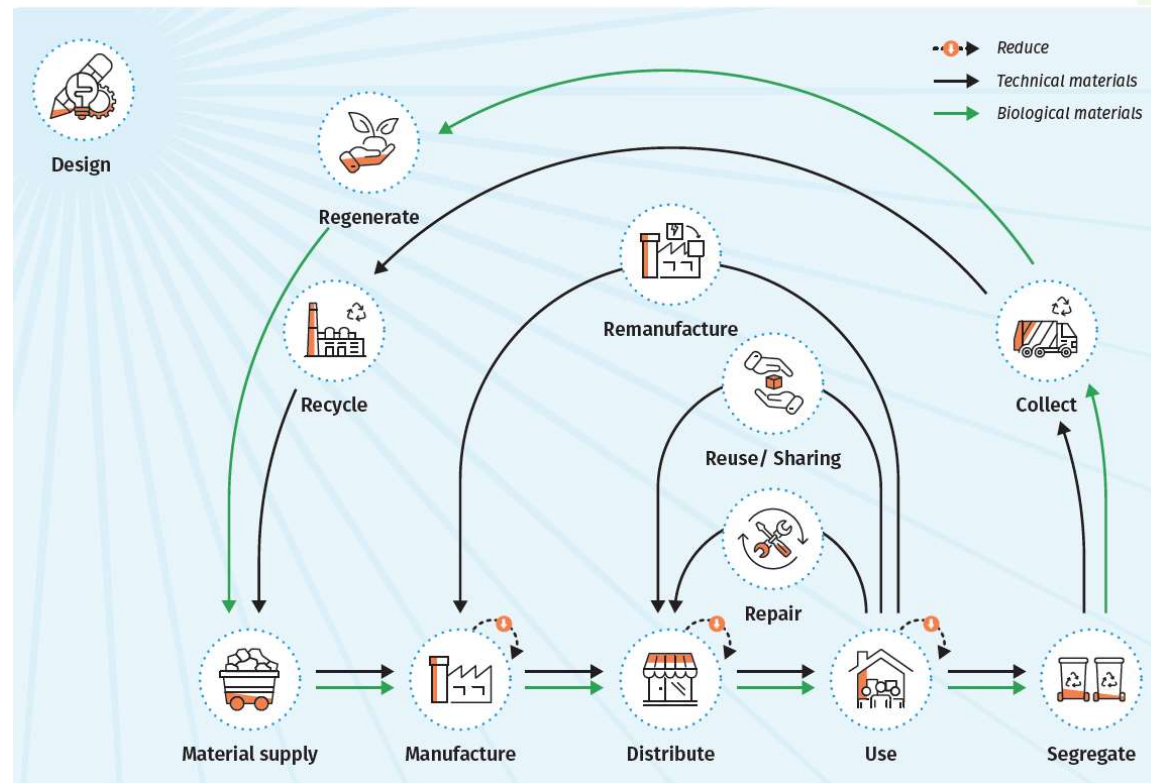
UNIDO Circular Economy vision

Materials:

- Improve quality of raw material
- Turn waste into product

Energy efficiency:

- LEDs
- Heat recovery
- Preheating
- Condensate return
- Insulation
- Upgrade of motors and equipment



Towards zero carbon:

- Biogas
- Biofuel
- Biowaste as fuel
- Photovoltaic panels

Product longevity

New business models





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Examples for CE measures in EU4Environment

- The use of biomass to generate energy at Azamet Grup SRL.
- Water recycling is planned at Art Granit SRL and Arama SRL.
- Plastic waste recycling is planned at Fratii Funze SRL.
- Valorisation of by-products at Monicol SRL.
- 200 kWp photovoltaic plant at Arama SRL.

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Global Network for Resource Efficient and Cleaner Production (RECPnet)



Centres of expertise working with industry to scale up and mainstream RECP

Powerful network: knowledge, experience, technology transfer

Over 70 members in more than 60 countries

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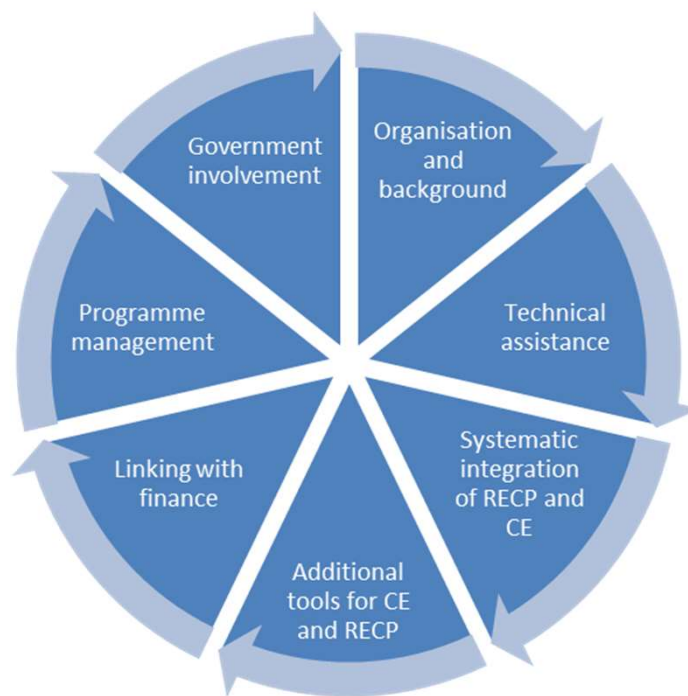


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The way forward



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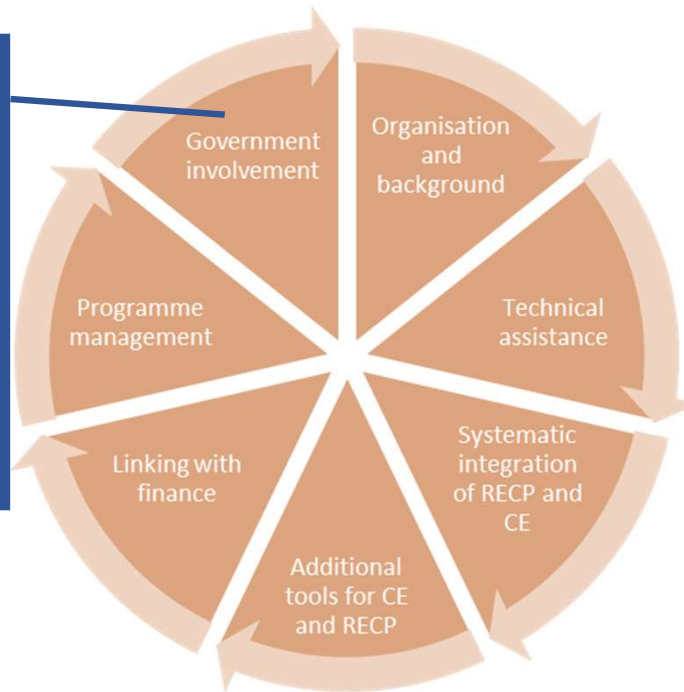
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The way forward

Supportive policy framework
General awareness
Support waste management hierarchy
Utility pricing
Provide stable system
Best practises implementation
Support research institutions



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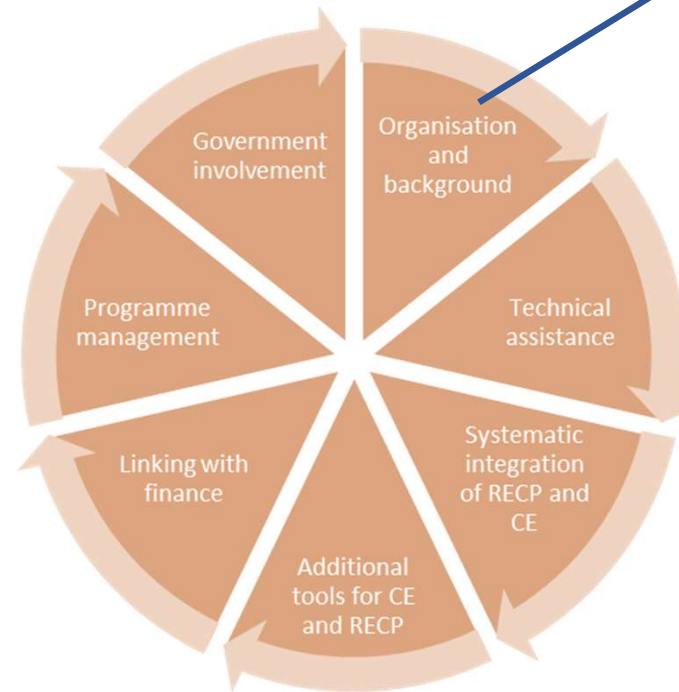


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The way forward



Establish a focal point
Establish supporting eco-system
Stakeholder involvement
Human resource development
Continuous marketing
PDCA - Continuous improvement

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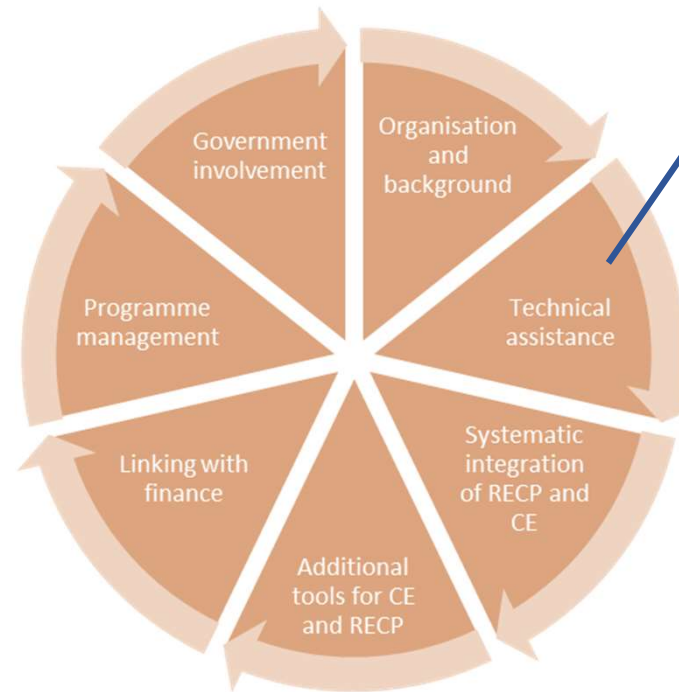


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The way forward



Provide continuous technical assistance

- Certification scheme
- Quality management
- Enhanced training
(Communication skills; CE and RECP)
- ESG reporting
- Demonstration
- Financial assistance
- Recognition

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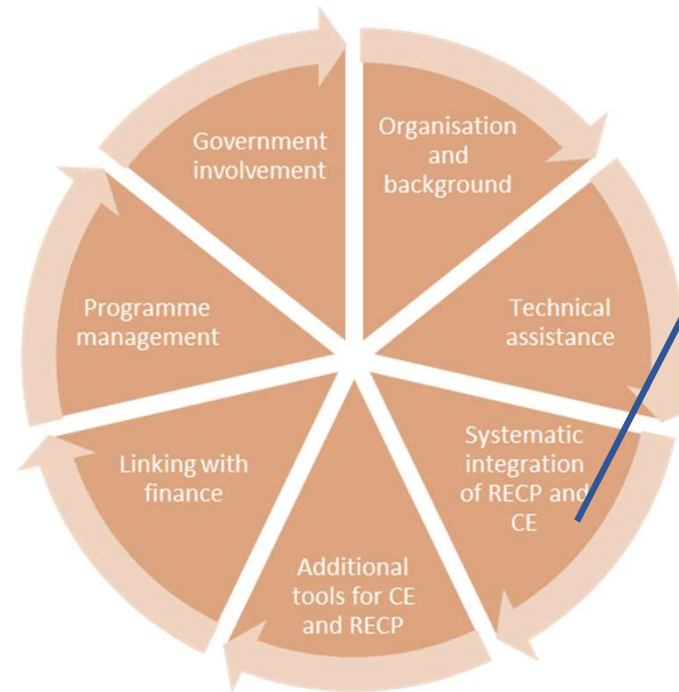


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The way forward



Reference guidelines
Assessment best practise
MFA with life cycle analysis
Energy efficiency and carbon footprint
Materials, chemicals, recycling
Business models and 10 Rs
CE and RECP clubs

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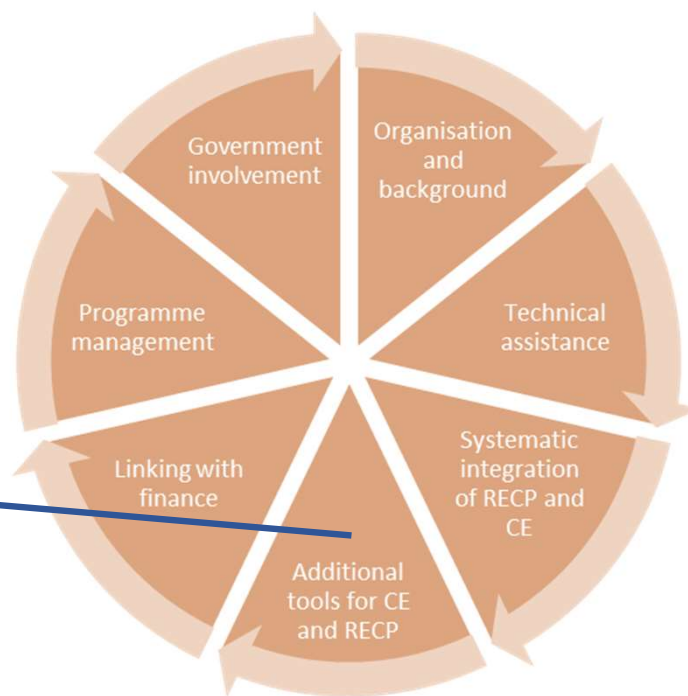
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The way forward

Micro-guidelines, repository
Knowledge management
Integrated training programme
Tools and data
Measurement equipment
Collaboration
Excursions



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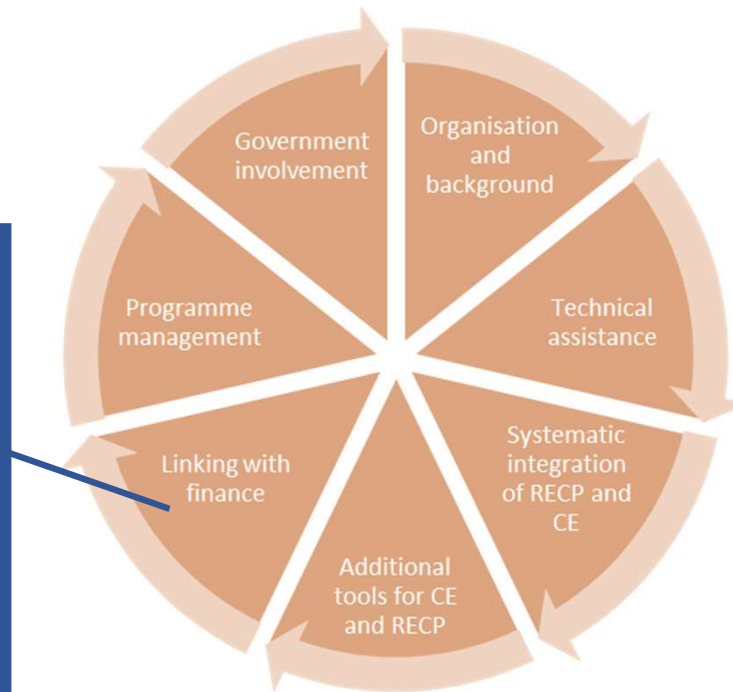
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The way forward

Link to finance
Preferential financing lines
Link to other donor programmes
SME support
Support for municipalities
Marketing and information



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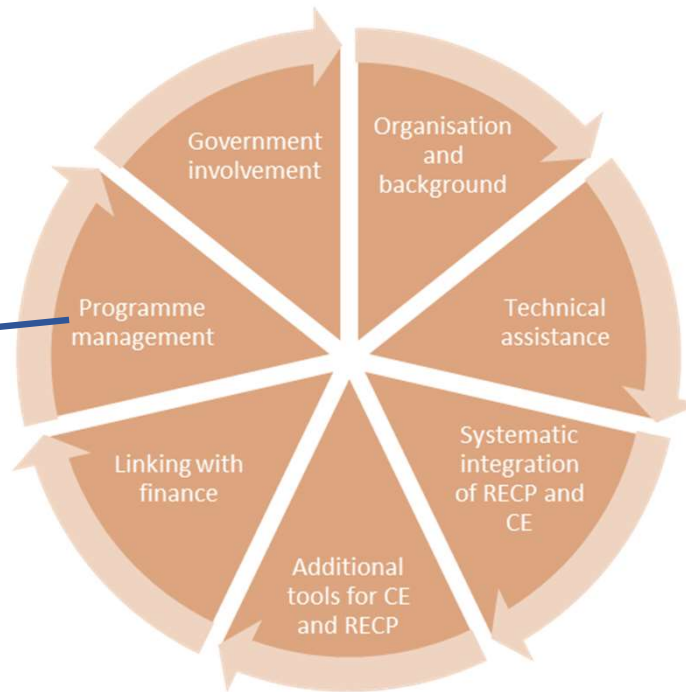
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The way forward

Project preparation
Nuture ecosystem
Develop consultants' pool
Liaise with other programmes
Manage knowledge flows



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Summary: The way forward

- Continuous support of enterprises
- Adapt focus, method, and materials to the characteristics of micro, small, medium and large enterprises
- Provide access to finance
- Support institutionalisation, nurture ecosystem, put together puzzle of stakeholders and donors
- Continue experts training with specialised trainings: circular materials, product design, circular business models, cooperation
- Provide personal experience to experts and companies



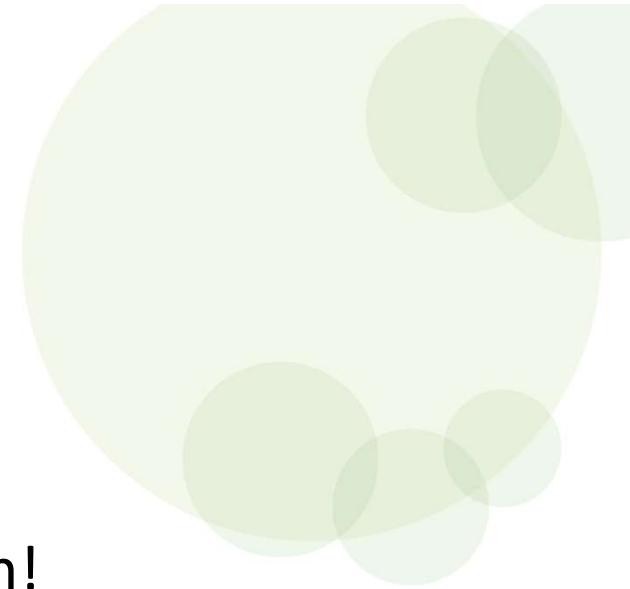
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Thank you very much for your attention!
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