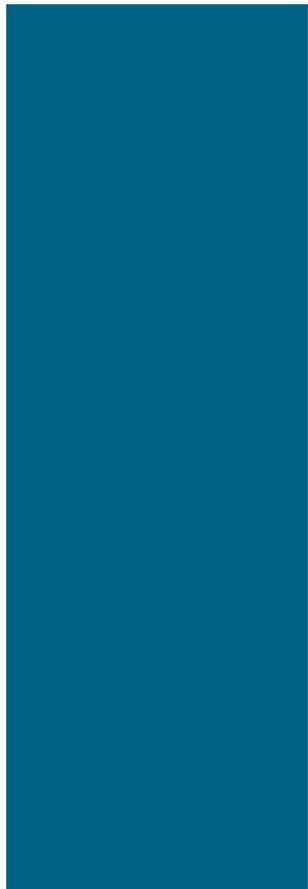




Fakulteta za
strojništvo



Univerza v Mariboru

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TAIEX SHARING
EU EXPERTISE
SINCE 1996

Workshop on End-of-Life Vehicles

organised in co-operation with
Ministry of Environment Protection of Serbia

Best practices and lessons learned from EU Member States: Slovenia

Waste-to-Energy & Circular Economy & End-of-life Vehicles

doc. dr. Filip Kokalj

Belgrade, 18.11.2019

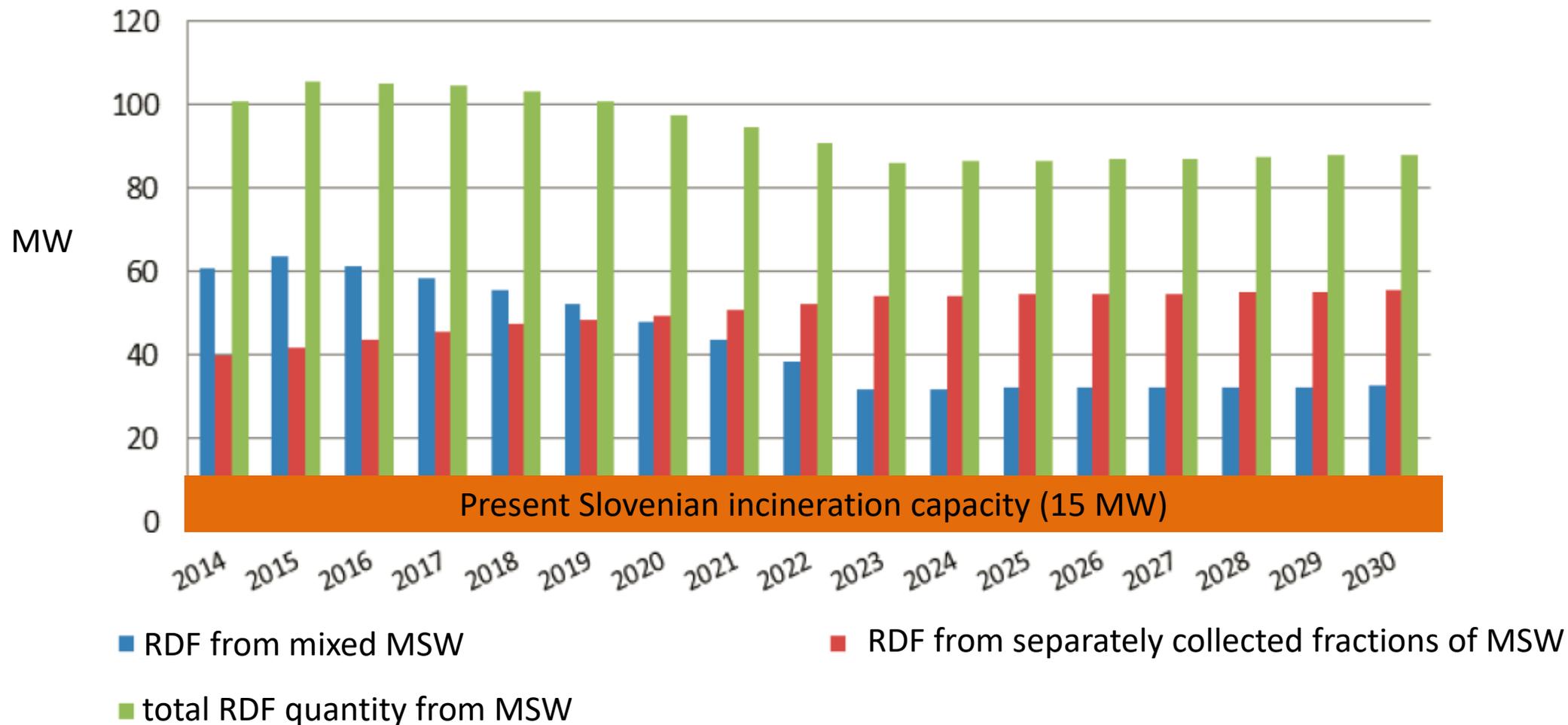


Presentation outline

Slovenian experience (best practices) in the field of:

- Waste-to-Energy
- Circular Economy
- End-of-life Vehicles

W-t-E: Present and future Slovenian needs





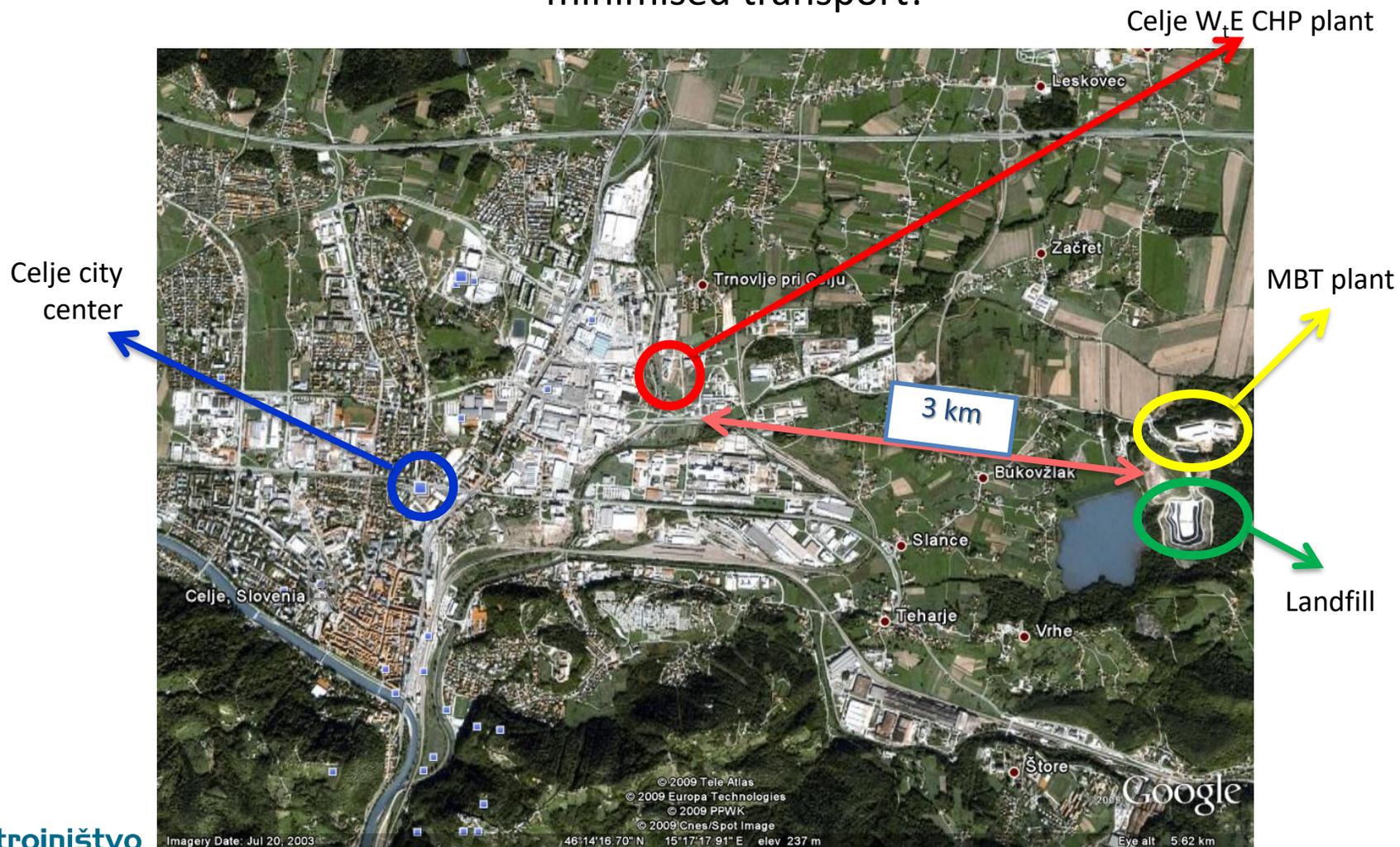
Present incineration and co-incineration plants in Slovenia

Status: November 2019

- Albaugh Rače (small capacity, hazardous & industrial waste)
- Energetika Celje – Toplarna Celje (MSW & SS W-t-E)
- Lek Lendava (industrial waste – internal use)
- Lek Mengeš (industrial waste – internal use)
- Salonit Anhovo (cement kiln)
- Vipap Videm Krško (paper pulp & cellulose production residues)

Satellite view of Celje W-t-E

Proximity of Celje centre: – minimised distribution losses!
– minimised transport!



Celje W-t-E treatment process

In technological process of thermal treatment of waste entering:

- Up to 24,900 t / year of pretreated municipal waste in the form of a light fraction (LF) from the MBT process with a calorific value **from 18 to 24 MJ/kg**
- Up to 5,100 t / year of sludge from wastewater treatment plants (SWTP) with a maximum of 25% of the dry matter, and the calorific value around **1 MJ/kg**.

The total calorific value of the mixture has an average of about **16 MJ/kg**.

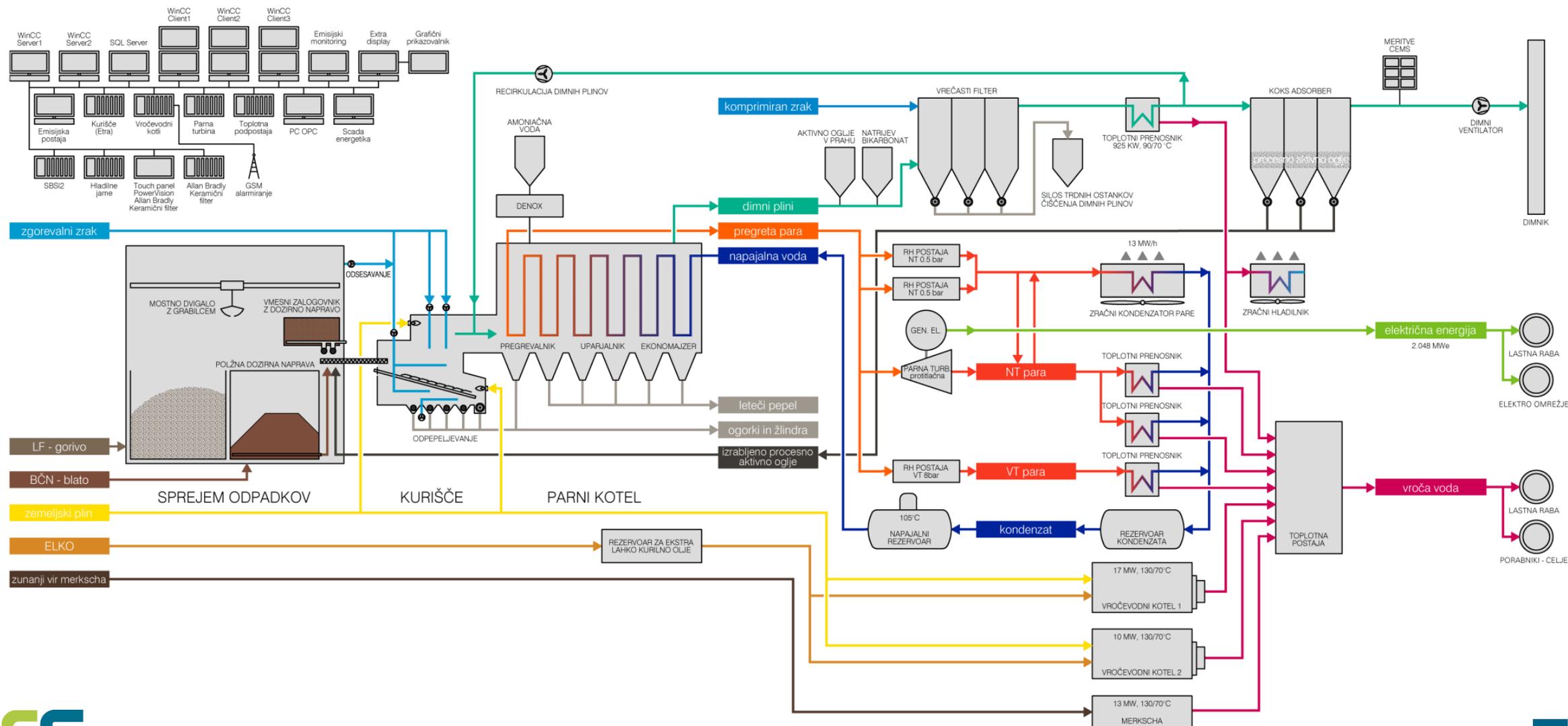


Celje W-t-E Technical Data

Fuel input:	30.000 t/a
Design calorific value (CV):	13,6 MJ/kg
Boiler thermal output:	15 MW _{th}
Steam parameters:	20 t/h, 30 bar _a , 350°C
Steam turbine output:	2,1 MW _e
Operation mode:	13 MW _{th} (110°C) + 2 MW _e 15 MW _{th} (130°C) + 0 MW _e
Operation:	24 h/day; 8.000 hours/year



Schematic Celje W-t-E Technological presentation





EU waste management future:

Key elements of the revised waste directives include:

- A common EU **target for recycling 65% of municipal waste** by 2030;
- A common EU **target for recycling 75% of packaging waste** by 2030;
- A binding landfill target to **reduce landfill to maximum of 10% of municipal waste** by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling ;
- Simplified and improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to **promote re-use and stimulate industrial symbiosis** –turning one industry's by-product into another industry's raw material;
- Economic incentives for producers to put **greener products on the market** and support recovery and recycling schemes (eg. for packaging, batteries, electric and electronic equipment, vehicles).



Official EU statement about W-t-E: The role of waste-to-energy in the circular economy (January 2017)

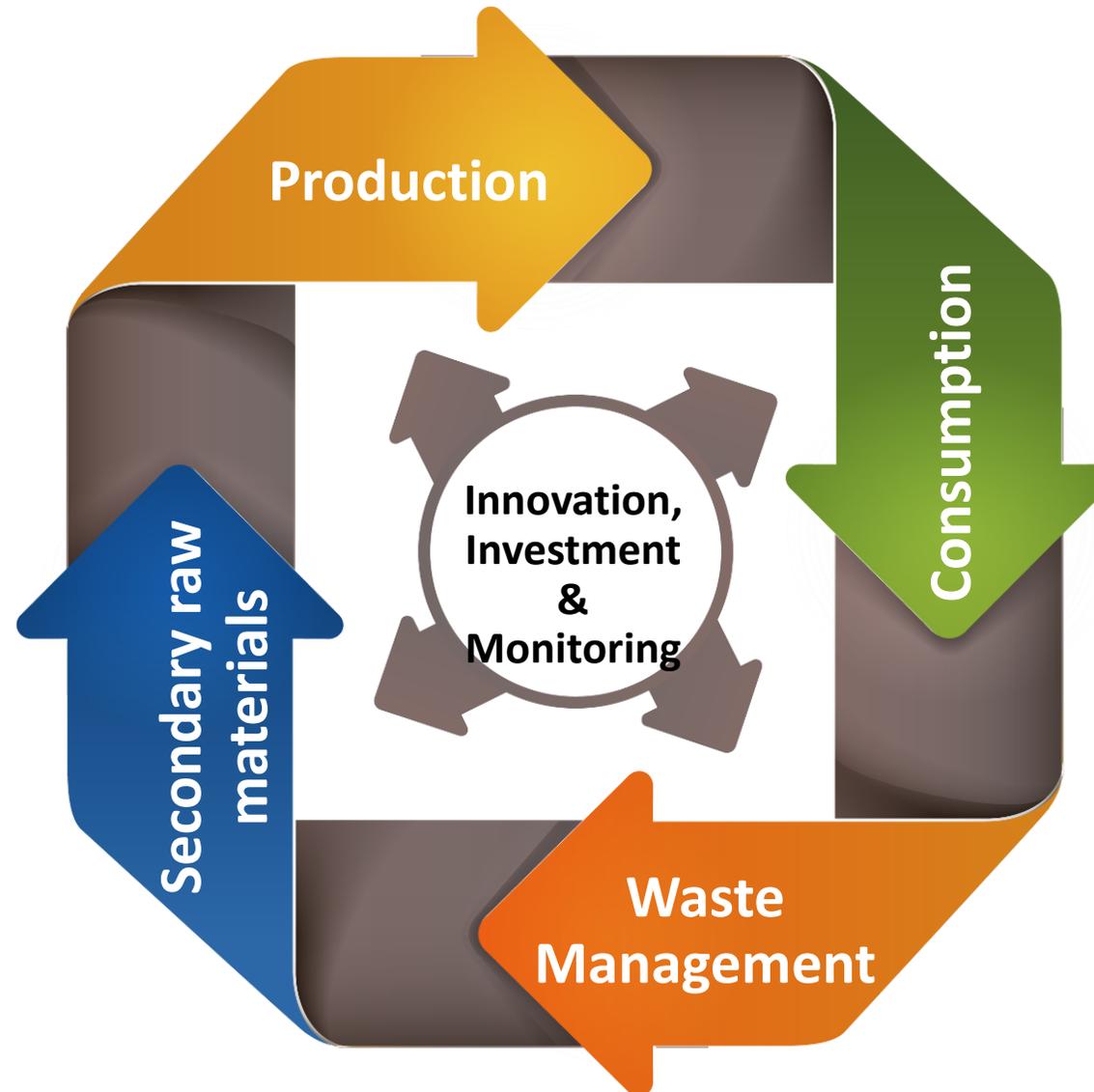
- recovery of non recyclable (combustible) waste
- capacity of plants in EU for W-t-E
- regional distribution of plants in EU
- technological level of plants
- combining W-t-E with other sectors



Conclusion: Slovenian future of W-t-E

- new capacity needed for around 150,000 tons/year of RDF from MSW
- opportunity to connect W-t-E to large district heating systems or industry (R1)
- a lot of other waste in Slovenia that needs thermal treatment (SS, industrial waste,...)

Circular economy: major areas addressed



1

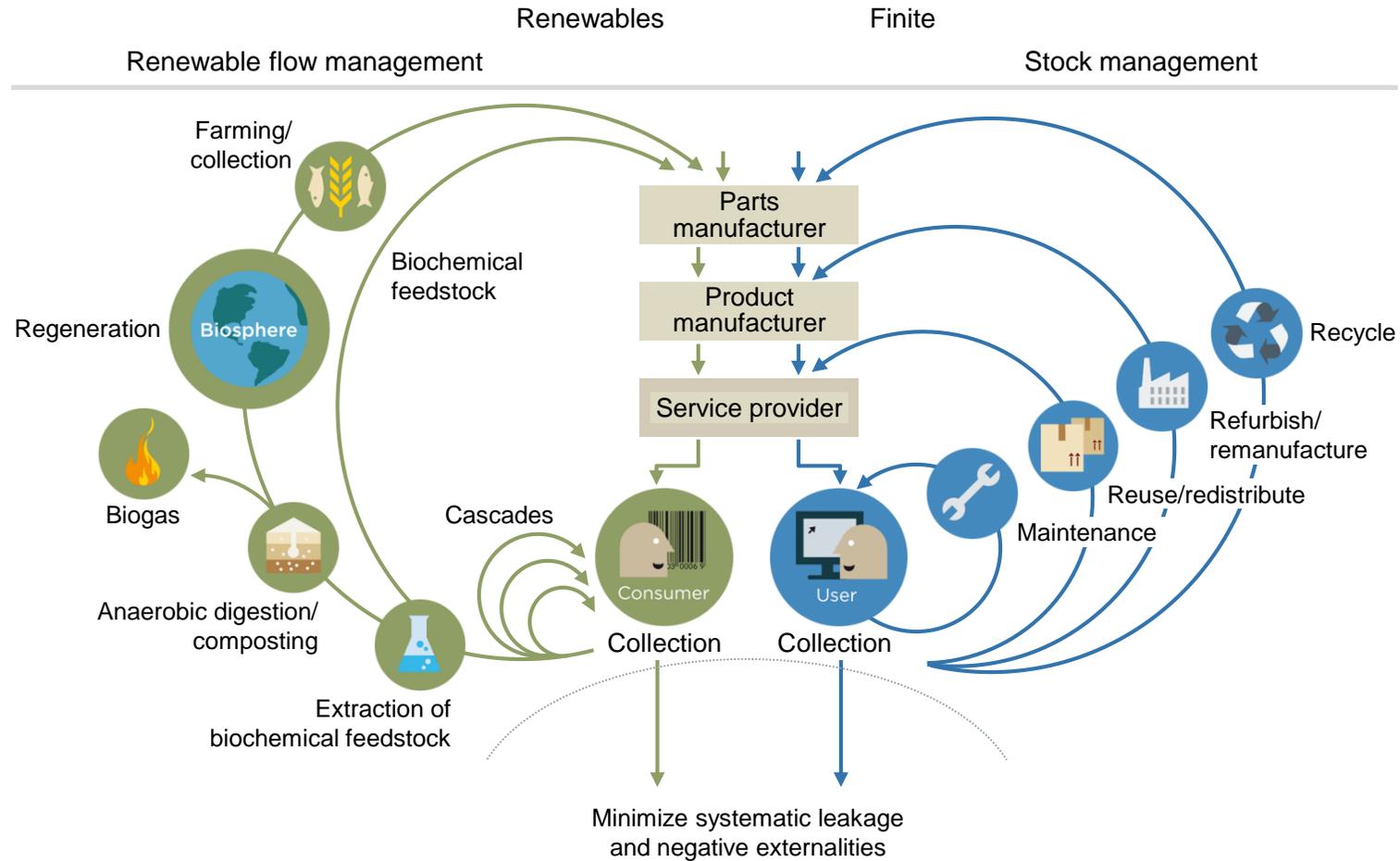
Serve and enhance natural capital by controlling finite stocks and balancing renewable resource flows

2

Optimise resource yields by circulating products and materials at the highest utility at all times in both the technical and biological cycles.

3

Foster system effectiveness by revealing and designing out negative externalities.

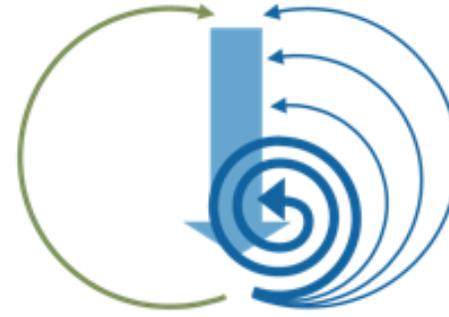


Value of loops

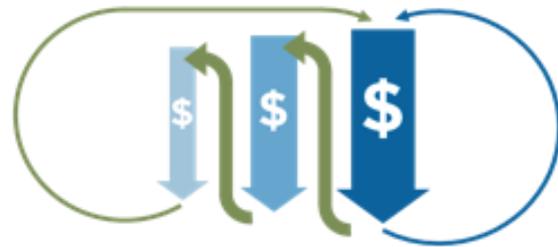
The power of the inner circle



The power of circling longer



The power of cascading



The power of pure inputs



Concrete EU actions of circular economy package

- ***ECO-DESIGN to include reparability, durability, recyclability***
- ***Legislation on FERTILISERS, Including organic and waste-based fertilisers***
- ***Minimum requirements for the REUSE OF WASTEWATER***
- ***Actions on GREEN PUBLIC PROCUREMENT***
- ***EU FUNDING for ‘industry 2020 in the circular economy’***
- ***Quality standards for SECONDARY RAW MATERIALS***
- ***STRATEGY ON PLASTICS, including marine litter***
- ***Interface CHEMICALS, PRODUCTS AND WASTE LEGISLATION***

Conclusion: some of Slovenian CE projects/activities

- Metal Ravne*** *A useful use of the excess heat of the steel industry in Ravne na Koroškem*
- Aquafil*** *Ecologic nylon produced from discarded fishing nets*
- Lumar*** *From passive to active house and almost complete independence from fossil fuels*
- Plastika Skaza*** *Organko bio-waste kitchen composters in Osijek and biodegradable “TO GO” pots*
- Alba Group*** *Competence center for recycling plastic materials for research and development activities in the recycling of waste plastic materials for the industry*
- Iskraemeco*** *Fair electricity meters for the Dutch market and a tool for transparency that will allow all businesses to trace materials and working conditions throughout the product supply chain*
- Ljubljana City*** *Participation in European projects on sustainable mobility ClairCity, Timon and SocialCa.*

ELV legislation in Slovenia

- **Directive 2000/53/EC** of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles ELI:
<http://data.europa.eu/eli/dir/2000/53/2018-07-04>
- **Decree on end-of-life vehicles** (SLO: Uredba o izrabljenih vozilih, Uradni list RS, št. 32/11, 45/11 – popr., 26/12 and 84/18 – ZIURKOE)
- **Motor Vehicle Charges Act** (SLO: Zakon o dajatvah za motorna vozila (Uradni list RS, št. 54/17)





Main ELV goals in Slovenia

- to ensure a unified system of collecting end-of-life vehicles on the entire territory of the Republic of Slovenia and 100% collection of end-of-life vehicles;
- to achieve target percentages of reuse and recovery (85% by the end of 2014 and 95% by the end of 2015);
- to achieve target percentages of reuse and recycling (80% by the end of 2014 and 85% by the end of 2015);
- to eliminate old burdens;
- to provide proper treatment of hazardous substances generated in the process of dismantling ELVs.



Present status in Slovenia

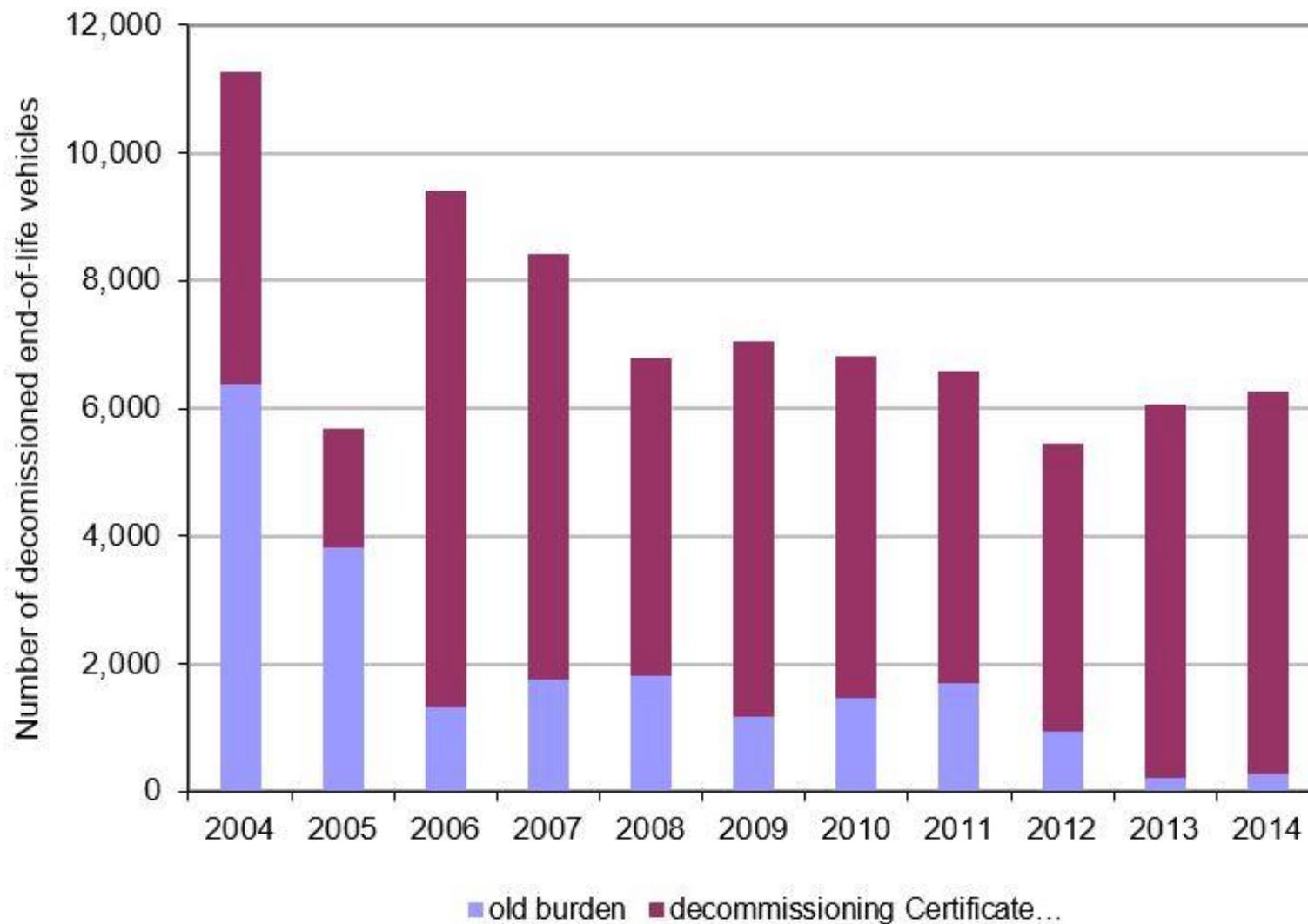
- In the Republic of Slovenia, the number of newly registered passenger cars has increased to around 100,000 in recent years. The upward trend of registered passenger cars is similar; from around 700,000 in the middle of the 1990s, the number has grown to almost 1,130,000 in recent years.
- Between May 2004 and the end of 2014, approximately 72,000 tonnes of ELVs were dried and dismantled in recovery centres, In 2014, slightly less than 6,300 cars were dismantled in Slovenia.
- Until 2011, the system of end-of-life vehicles management was provided by public utility services. One essential measure for the functioning of the system was the introduction of the “dismantling certificate”. Upon deregistration of a vehicle, the last owner of a vehicle qualifying as an end-of-life vehicle pursuant to regulations governing environmental protection and end-of-life vehicle management was obliged to present a certificate of vehicle destruction. The service of dismantling is free of charge for the last owner of a vehicle. Since its establishment in April 2004, the public utility service providers have dismantled 72,590 ELVs.



Present status in Slovenia

- According to the most recent estimates, at least 30,000 end-of-life vehicles are generated in Slovenia each year. The actual number of dismantled ELVs differs considerably from these estimates largely due to abuse of the instrument of deregistration of vehicles. Vehicle location statements are being abused in such a way that the last owners are using them to deregister vehicles that are later being illegally dismantled. In view of the large number of vehicle location statements that are issued in Slovenia (approximately 15,000 annually), it is impossible to efficiently carry out control of vehicles that are deregistered in this way.
- With the adoption of a new regulation introducing extended producer responsibility, end-of-life vehicle management has become more transparent. In Slovenia there are currently 47 collection points for end-of-life vehicles that collect ELVs under the authorisation of three dismantling facilities operating within the framework of the extended producer responsibility system. In addition, 16 independent facilities for ELV dismantling operate. For the last owner, recovery of an end-of-life vehicle is rendered free of charge. Upon handing over an end-of-life vehicle for dismantling, the owner is issued a certificate of destruction.

ELVs in Slovenia



Dismantling facility in SLO



Dismantling facility in SLO



Dismantling facility in SLO



Dismantling facility in SLO





Measure to enlarge the number of officially dismantled ELVs in SLO

The Motor Vehicle Charges Act introduces a deregistered vehicle levy, which became effective on April 1, 2018.

Tax is payable on the M1, N1, and L2e vehicle categories. For the first time, the obligation to pay arises after one year has elapsed since the vehicle has been checked out (unregistered) and is payable 10 years after the vehicle has been checked out. The levy is payable once a year. If the owner of an unregistered vehicle transfers ownership to another person established or domiciled in the Republic of Slovenia, the new owner of the unregistered vehicle becomes liable for payment of the annual unregistered vehicle tax within the same time limits as the previous one.

The amount of the annual charge for a unregistered vehicle is set at 25% of the annual charge fixed for such vehicle, but not less than 25€.

The obligation to pay a tax for an unregistered vehicle ceases if it appears in the register of registered vehicles maintained under the law governing motor vehicles that the vehicle was:

- submitted for decommissioning in accordance with environmental protection regulations or
- registered again.

The obligation to pay an annual charge for a unregistered vehicle shall also terminate if the owner submits to the administrative unit or holder of a public authorization:

- certificate of destruction of the vehicle in accordance with the regulations governing environmental protection,
- a police record stating that the vehicle was stolen,
- proof that the vehicle was registered in another country or
- an export customs declaration confirming the exit of vehicles from the customs territory of the Union.



Conclusion

Explore the ideas and possibilities of circular economy in every aspect of the life:

- W-t-E,
- ELV,
- etc.