Predlozi mera ublažavanja klimatskih promena – poglavlje SNC

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U ime tima koji radi na delu SNC - Reporting on GHG Inventory and CC Mitigation

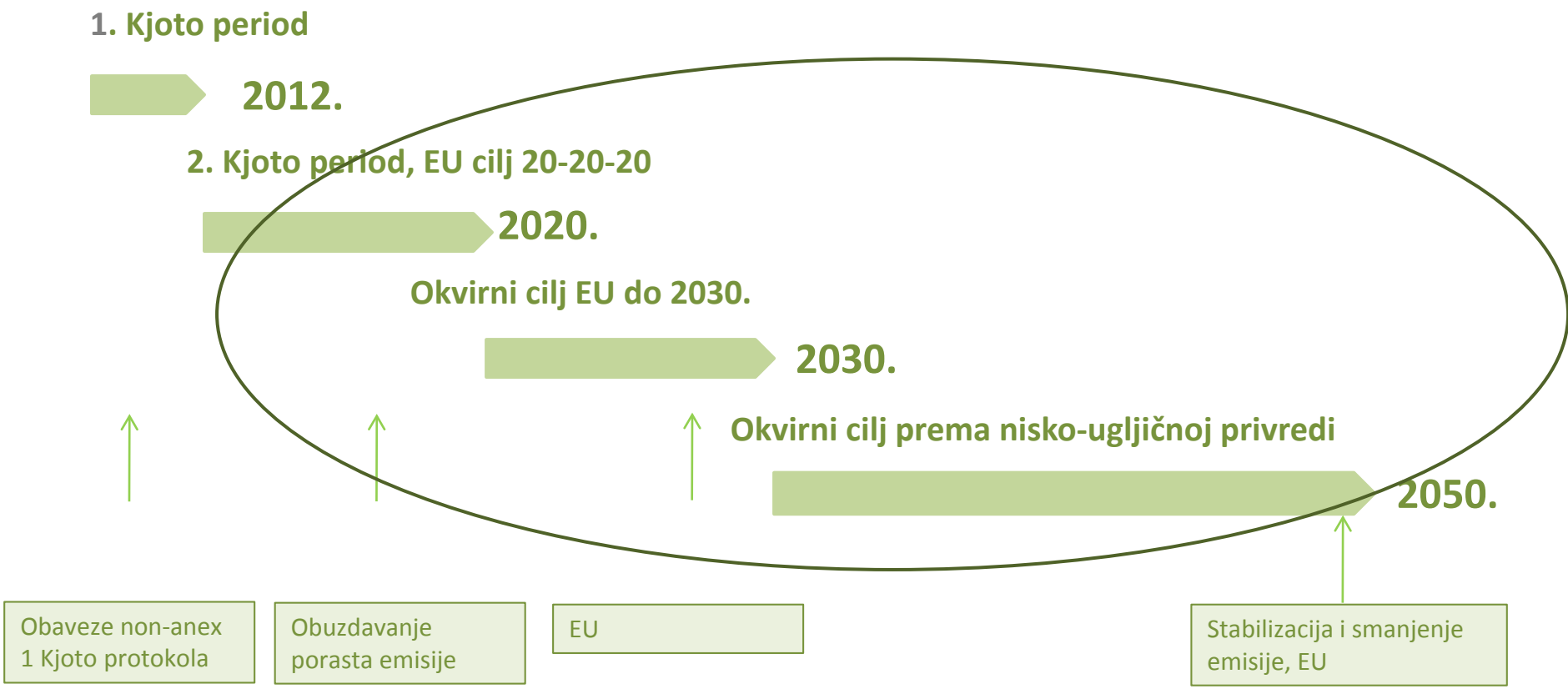
Radionica: „Razvoj politike u oblasti klimatskih promena u kontekstu međunarodnih i EU procesa“
Hotel Zira, Beograd, 15.12.2014. g.

Uvod o obavezi izrade nacionalnih izveštaja

- Kao potpisnik UNFCCC-a i Kjoto protokola, RS je obvezna periodično izrađivati nacionalni izveštaj (*National communications*) u kojima izveštava o sprovodjenju mera i obaveza prema medjunarodnim ugovorima
- Sadržaj, metodologija, periodičnost i rok podnošenja nacionalnih izveštaja dati su odlukama i uputstvima
- Svake druge godine podnosi se tzv. Dvogodišnji izveštaj (*Biennial reports*) u skladu sa odlukama Konvencije 2/CP.17 i 19/CP.18.

- Prvi (Inicijalni) nacionalni izveštaj uradjen je 2010. godine, i obuhvatio je 1990. i 1998. godinu
- Drugi nacionalni izveštaj obuhvata period od 1990. godine do 2013. godine, podeljeno u period do prvog i od prvog nacionalnog izveštaja

Politika i mere – vremenski okvir



INC - Shares of Total CO2eq Emissions by Sectors, 1990. and 1998.

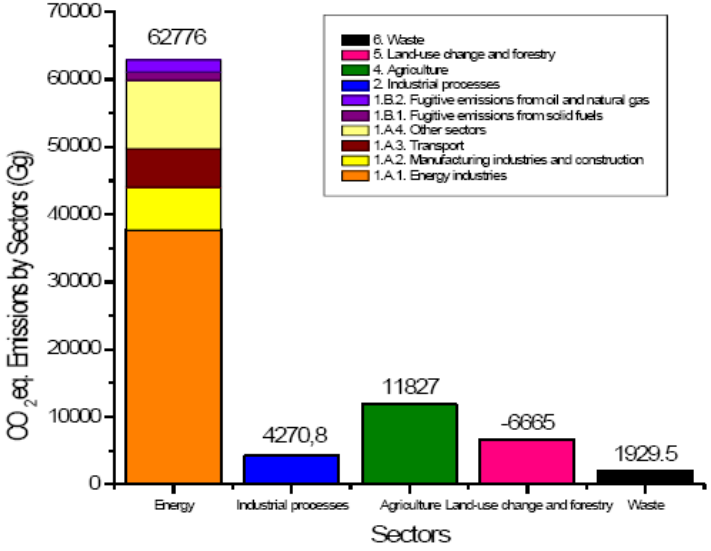


Figure 1.1. Greenhouse Gas Emissions (GHG) by sector, Republic of Serbia in 199(

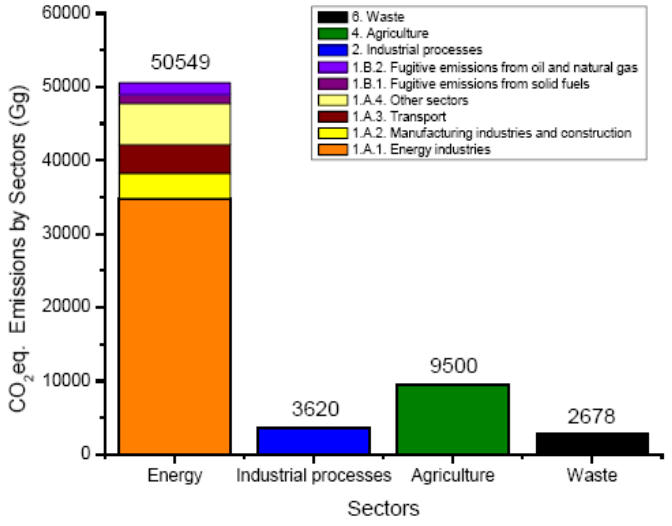


Figure 3.17. Greenhouse Gas Emissions (GHG) by sector, Republic of Serbia, 19

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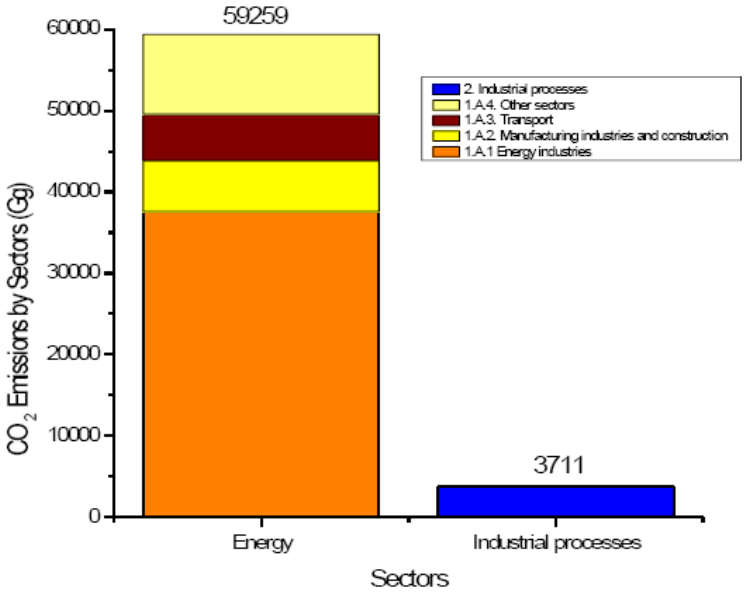


Figure 3.3. CO_2 Emissions by Sector/Sub-sector, Republic of Serbia, 1990.

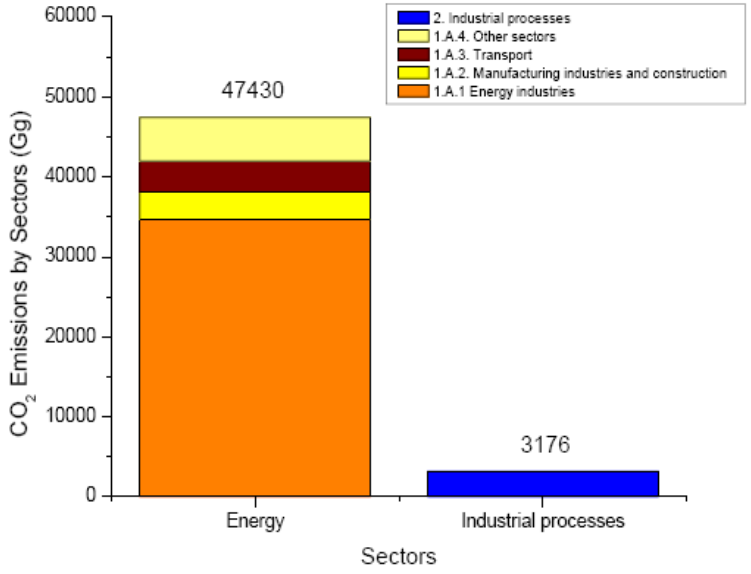


Figure 3.19. CO_2 Emissions by sectors, Republic of Serbia, 1998.

INC – Projections in Energy sector

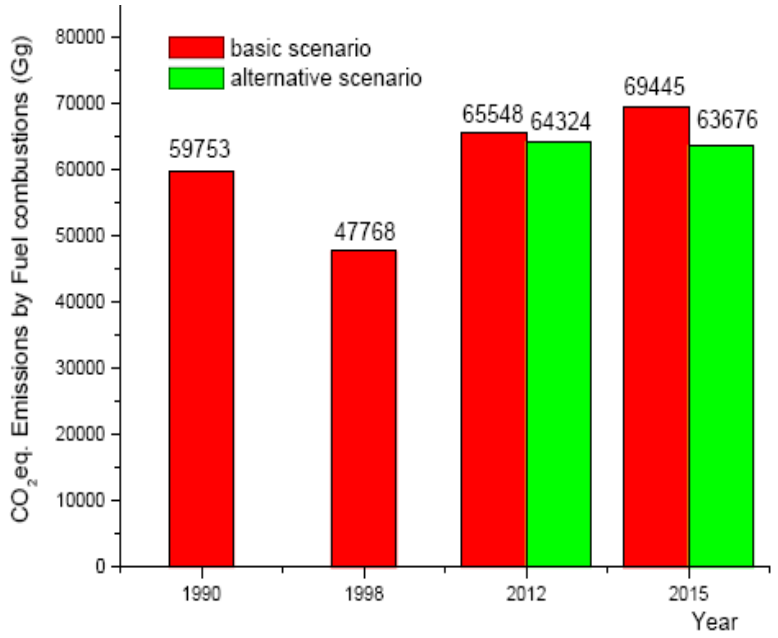


Figure 5.3. The GHG emissions arising from the combustion of fossil fuels for energy generation until 2015, baseline/alternative scenario

- According to both scenarios (INC), an increase in GHG emissions is expected in relation to the base year 1990.
- According to the baseline scenario, this increase will be 9.7 % until 2012 and 16.22 % until 2015. Implementation of the alternative, complementary measures, would limit the increase to 7.65 % until 2012 and 6.56 % until 2015.
- Implementation of the alternative scenario would reduce growth of GHG emissions in relation to the base year 1990.

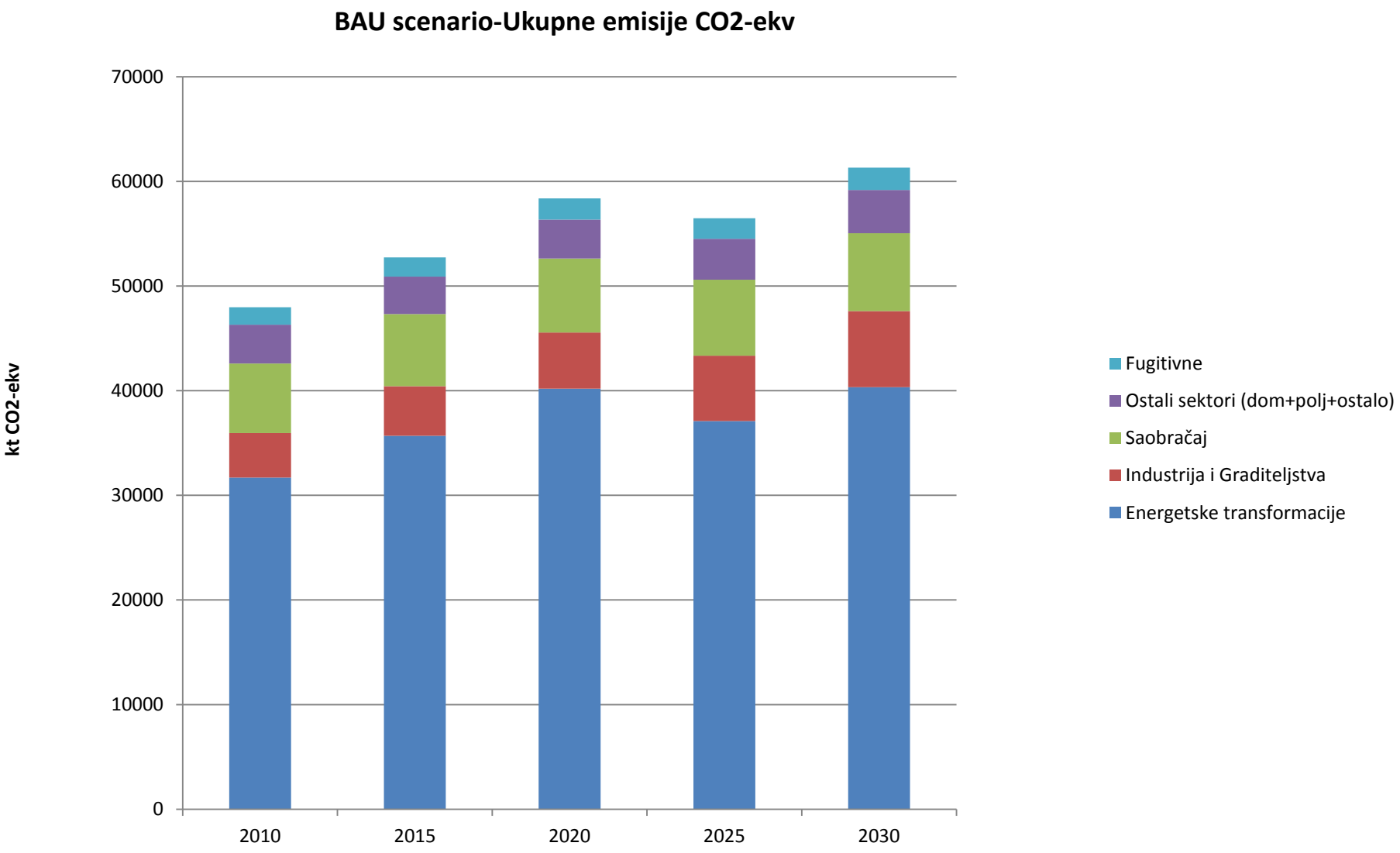
SNC - Proračun emisija za naredni period – Energetika i drugi sektori

- Prilikom kreiranja scenarija koristile su se odgovarajuće pretpostavke – za svaki sektor posebno
- Za proračun korišćene IPCC oznake i nomenklatura – radi lakšeg poredjenja
- **Tri scenarija** – u skladu sa strategijom energetike
- Scenario bez mera – BAU - VEOMA VAŽAN - isključuje primenu planirane politike ili mera nakon godine odabrane za početnu godinu scenarija
- Referentni scenario iz strategije – scenario sa merama - predviđa primenu važeće politike i mera čija je primena već u toku, odnosno primenu politike i mera koje su usvojene - strategija
- Scenario sa primenom mera energetske efikasnosti – scenario sa dodatnim merama
- Podaci o potrošenom gorivu preuzeti su iz Strategije enrgetike

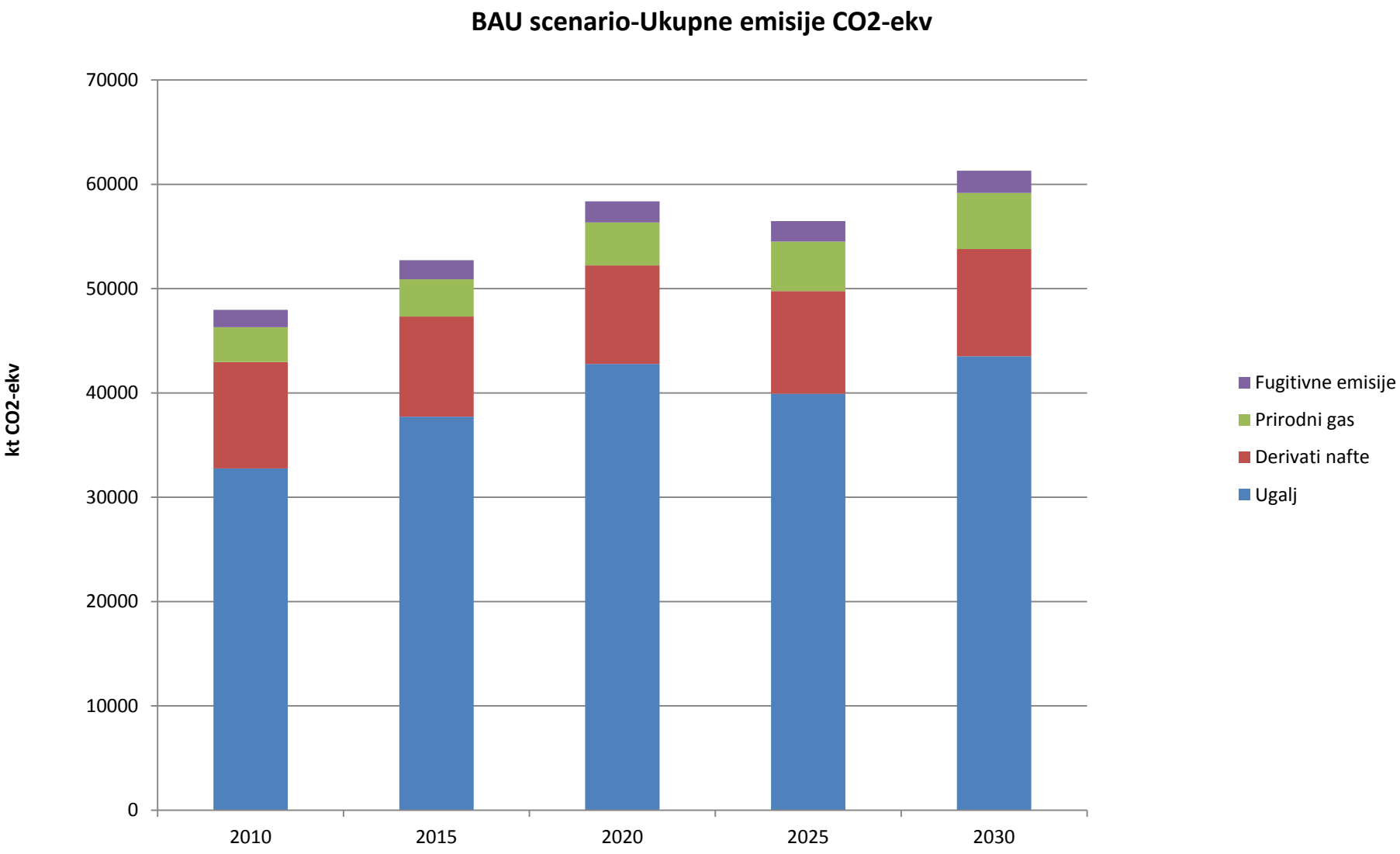
Proračun emisija za naredni period

- Prepostavke za scenario bez mera – BAU
  - Poremećaj finansiranja investicija - pogotovo za EE i OIE – razlog ekonomska kriza i poplave 2014
  - Cena tečnog goriva pre dve godine i danas
  - Potrošnja tečnih goriva u narednom periodu raste
  - Broj vozila raste
  - Potrošnja biomase konstantna u narednom periodu u odnosu na 2010. godinu
  - Nema korišćenja biogoriva iznad 10%
  - Ne raste ni korišćenje hidorpotencijala
  - Nedostatak energije iz OIE nadoknadjuje se ugljem
  - PAZITI – održivo korišćenje šuma

Rezultati – energetika po sektorima



Rezultati – energetika po gorivima



Draft energy Strategy

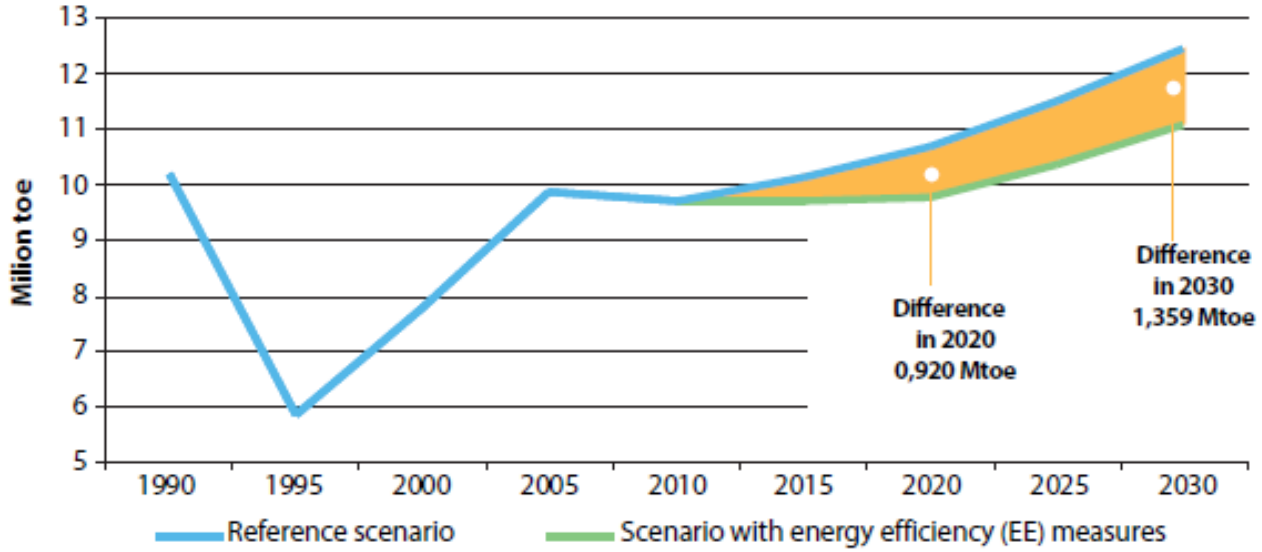


Diagram III-9: Projection of final energy consumption

Table A-17: Emmision of CO_2 connected to energy sector (million tones of CO_{2eq})

Year	Reference scenario	Scenario with energy efficiency measures application
2010	42,63	42,63
2015	45,18	44,22
2020	42,02	39,98
2025	43,42	41,05
2030	46,29	43,59

Energetika i sagorevanje u industrijskim procesima

(CO_2, CH_4, N_2O):

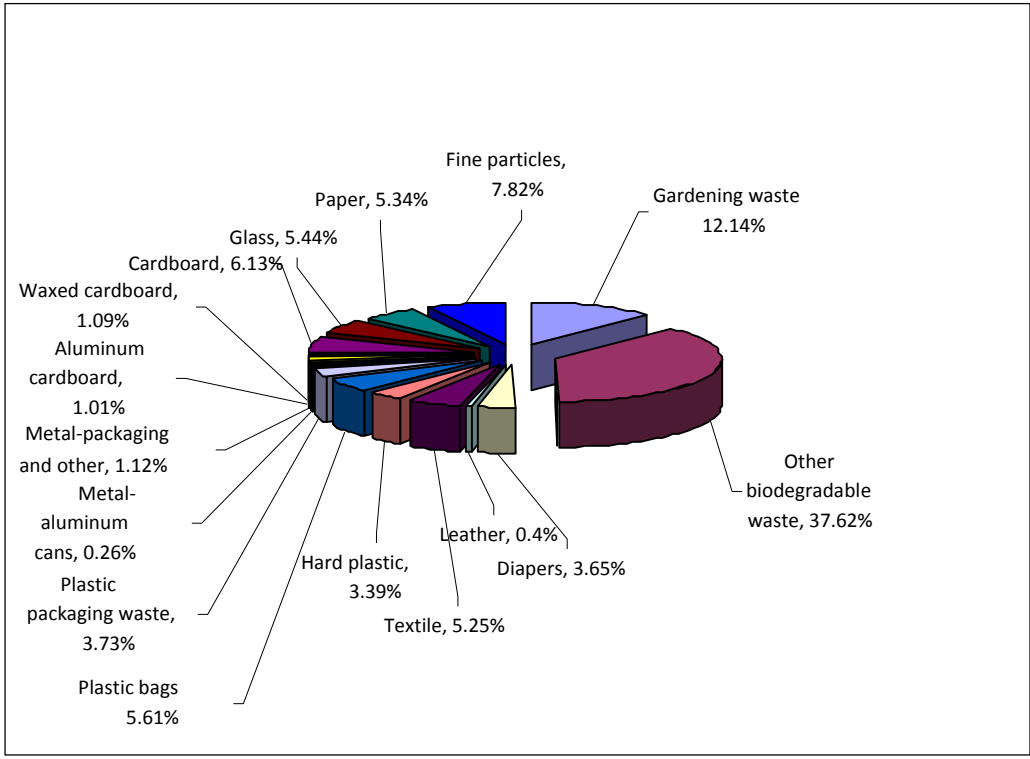
- Podsticanje primene OIE u proizvodnji električne energije
- Podsticanje primene OIE u proizvodnji toplotne/rashladne energije
- Energetski pregledi u industriji
- Podsticanje EE
- Podsticanje izgradnje kogenerativnih postrojenja
- Podsticanje EE u domaćinstvima
- Dalje označavanje energetske efikasnosti kućnih aparata
- Korišćenje goriva iz otpada za proizvodnju električne energije i toplote
- Dalje korišćenje goriva iz otpada u industriji cementa

Transport (CO_2, CH_4, N_2O):

- Informisanje potrošača o ekonomičnosti potrošnje goriva i emisija CO_2 novih automobila
- Izvodjenja pilot projekata i uspostavljanje sistema obrazovanja vozača za eko vožnju – UNDP projekat kao primer
- Podsticanje proizvodnje i korišćenja biogoriva
- Financijski podsticaji pri kupovini hibridnih i električnih vozila
- Razvoj infrastrukture za električna vozila u urbanim sredinama

Waste Managament in Serbia

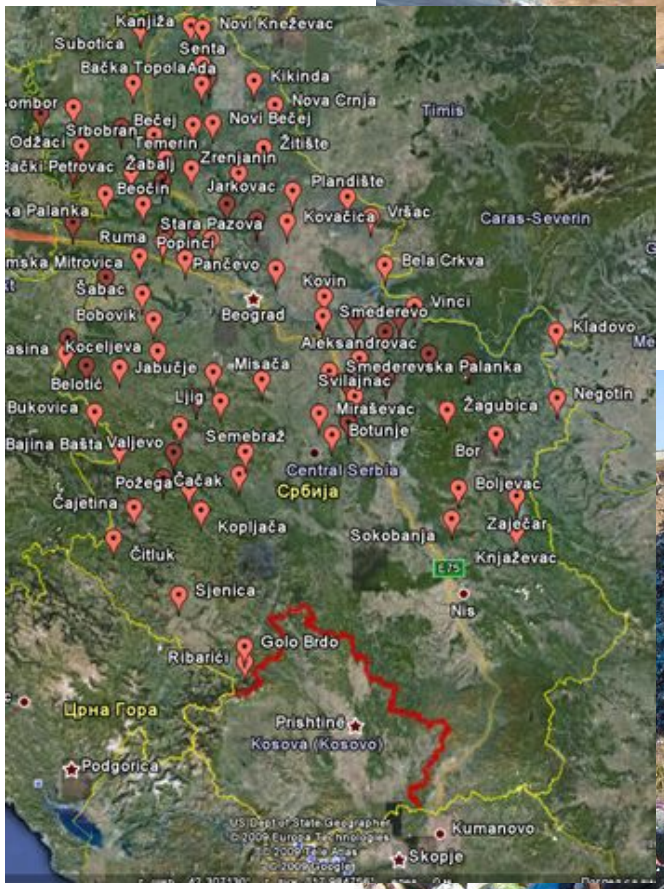
- Urban population generates 1 kg of MSW/cap./day
- Belgrade - 1,2 kg MSW/cap./day
- App. 0,87 kg MSW/cap./day (318 kgMSW/cap./a)
- 2.4 milion tons of MSW/a (2010.)
- 3.4 milion tons of MSW/a (2020.)



Waste Managament in Serbia

- Waste management in Serbia **depends heavily on sanitary landfill** sites

- In Serbia there are more than **3000 illegal dump sites**
- **In future – according to National strategies (2003, 2010, new in preparation) 12-24 regional WM centers**



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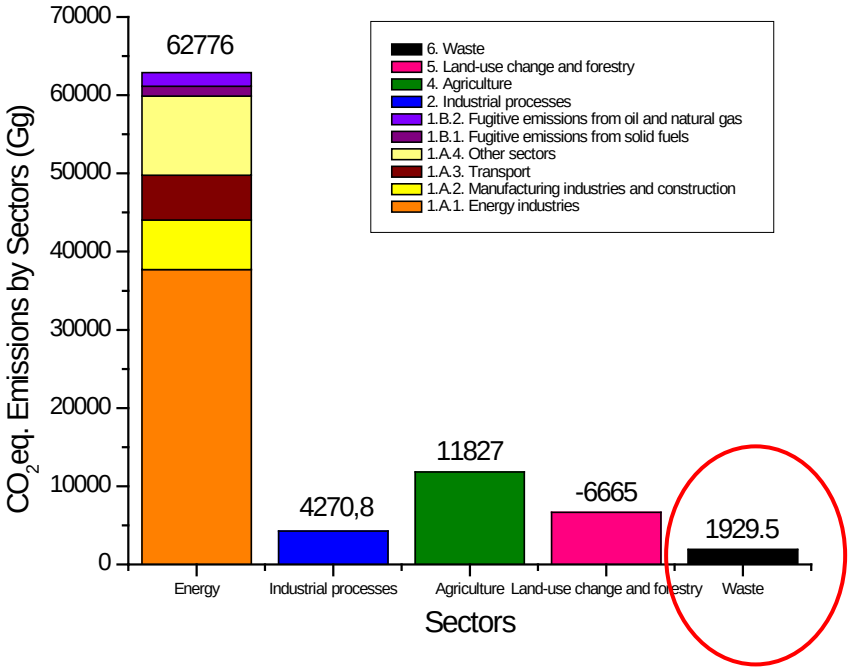
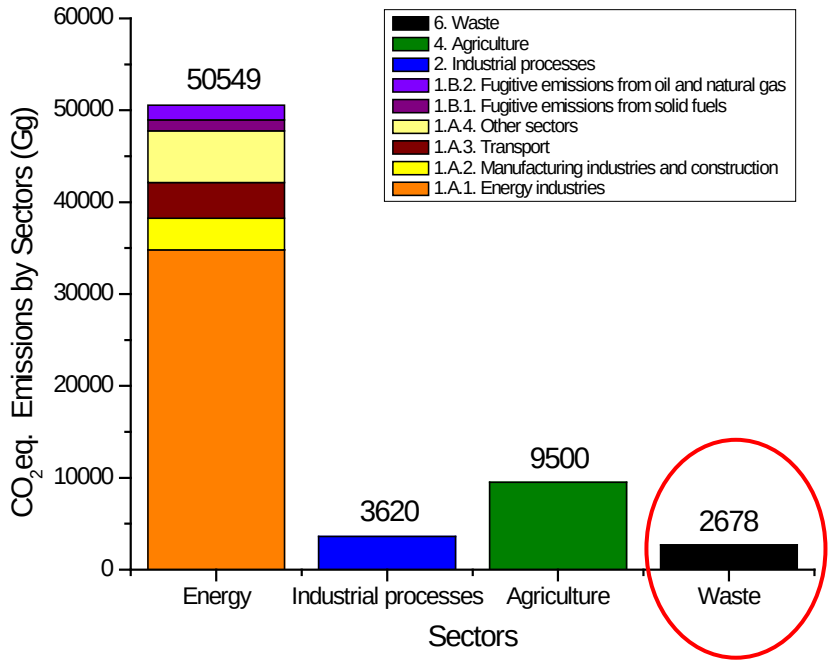
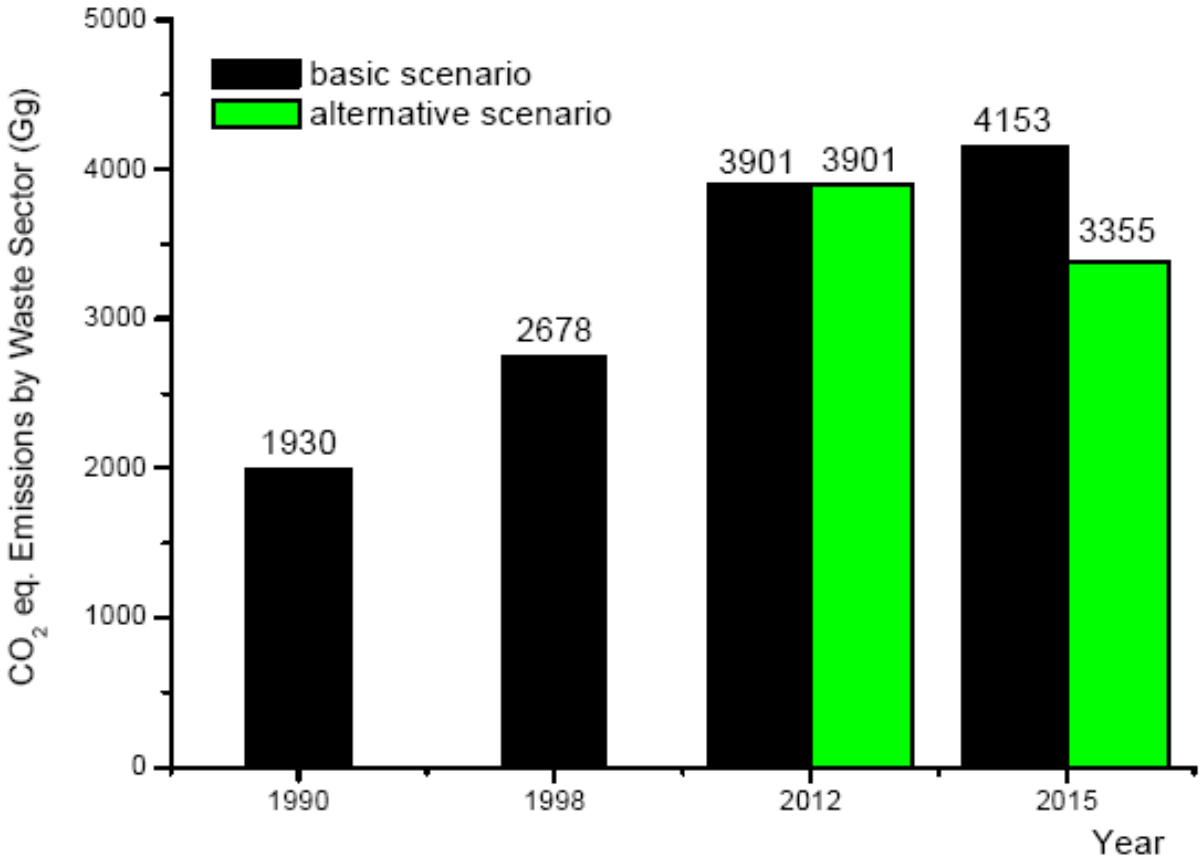




GHG Emission CO2eq, 1990. and 1998.

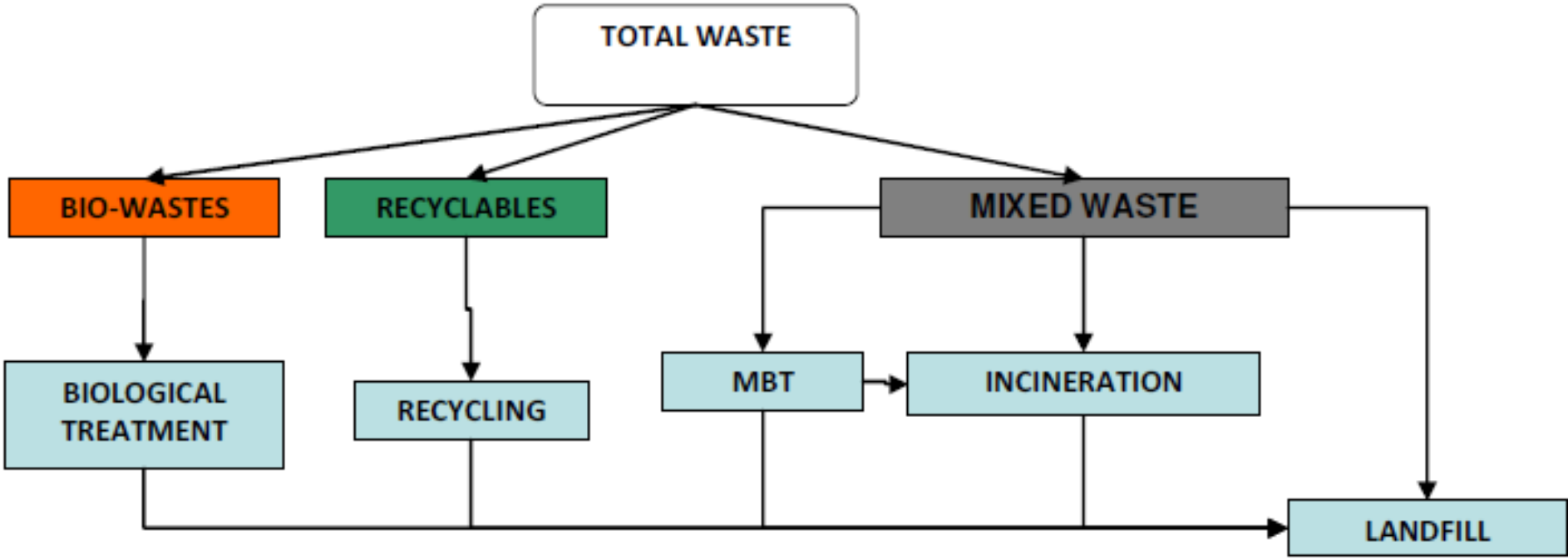
INC - Serbian GHG emission in future from waste sector



LOCSEE
Low Carbon South East Europe

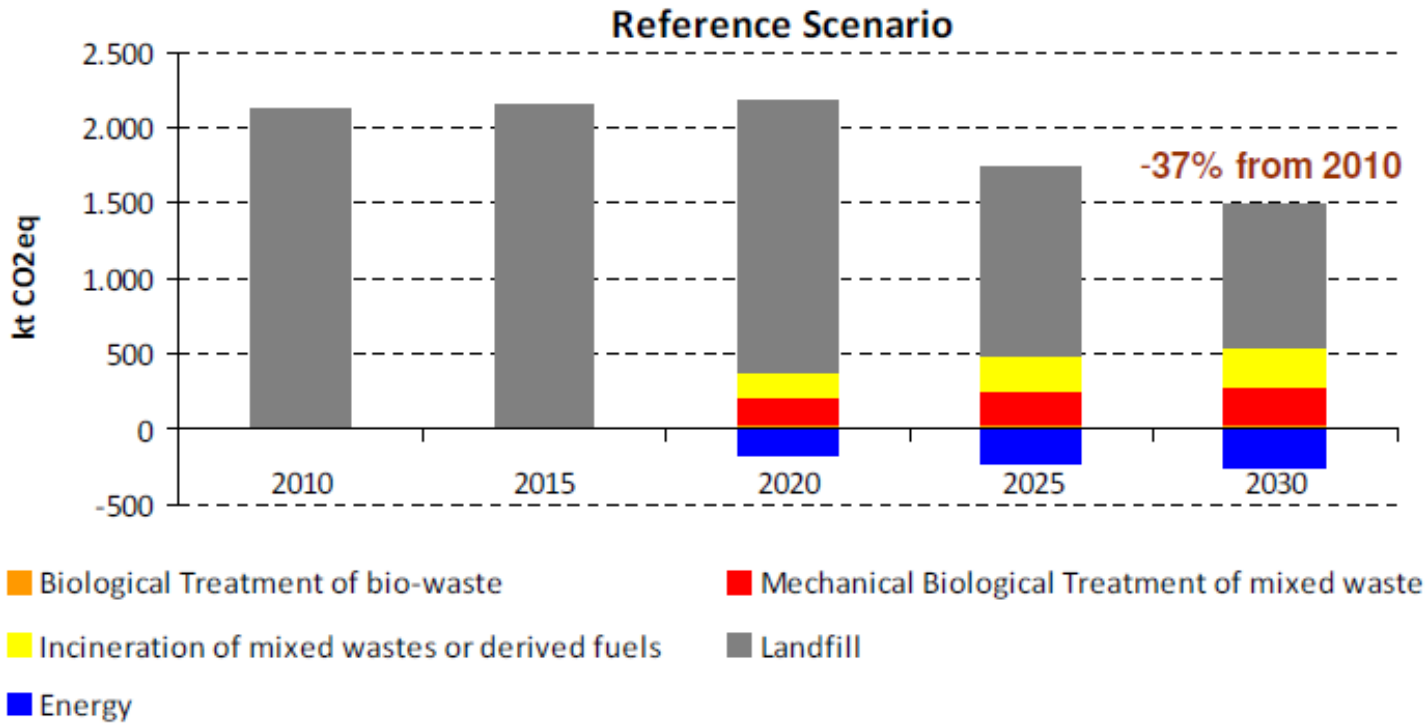
- **Objectives**
  - The WASTE-C-CONTROL project aims to enable reduced GHG emissions by developing a software tool that will assess, monitor, control and report on the emissions resulting from the entire life cycle of solid-waste management activities.
  - Using a systematic approach, the project will assess different waste-management options with regards to their GHG emissions.
  - This will enable the project to identify procedures and practical tools within local action plans (LAP) that would reduce GHG emissions from waste-management activities at local level.

- The following treatment technologies and disposal options are applicable:
  - the biological treatment of separately collected bio-waste (composting and AD);
  - the material recovery of separately collected dry recyclables;
  - MBT and bio-drying of mixed wastes (recovery of recyclables with a combination of sorting equipment and the biological treatment of the organic fraction), with the derived fuel used in waste-to-energy facilities;
  - the incineration of mixed wastes and fuels derived from MBT in waste-to-energy facilities with power generation; and
  - the landfilling of mixed wastes and residues from pre-treatment.


TOTAL WASTE
BIO-WASTES
RECYCLABLES
MIXED WASTE
BIOLOGICAL TREATMENT
RECYCLING
MBT
INCINERATION
LANDFILL

GHG emission projections from the solid waste sector for the period 2010–2030 according to the results of the bottom-up energy model (reference scenario)

National legislation (packaging waste recycling and the reduction of biodegradable waste going to landfill) is expected to reduce emissions for the period until 2020, while significant reductions are expected after 2020 (from 2,110 tonnes of CO_2-eq in 2010 to 1,330 tonnes of CO_2-eq in 2030).



GHG emissions reduction scenarios

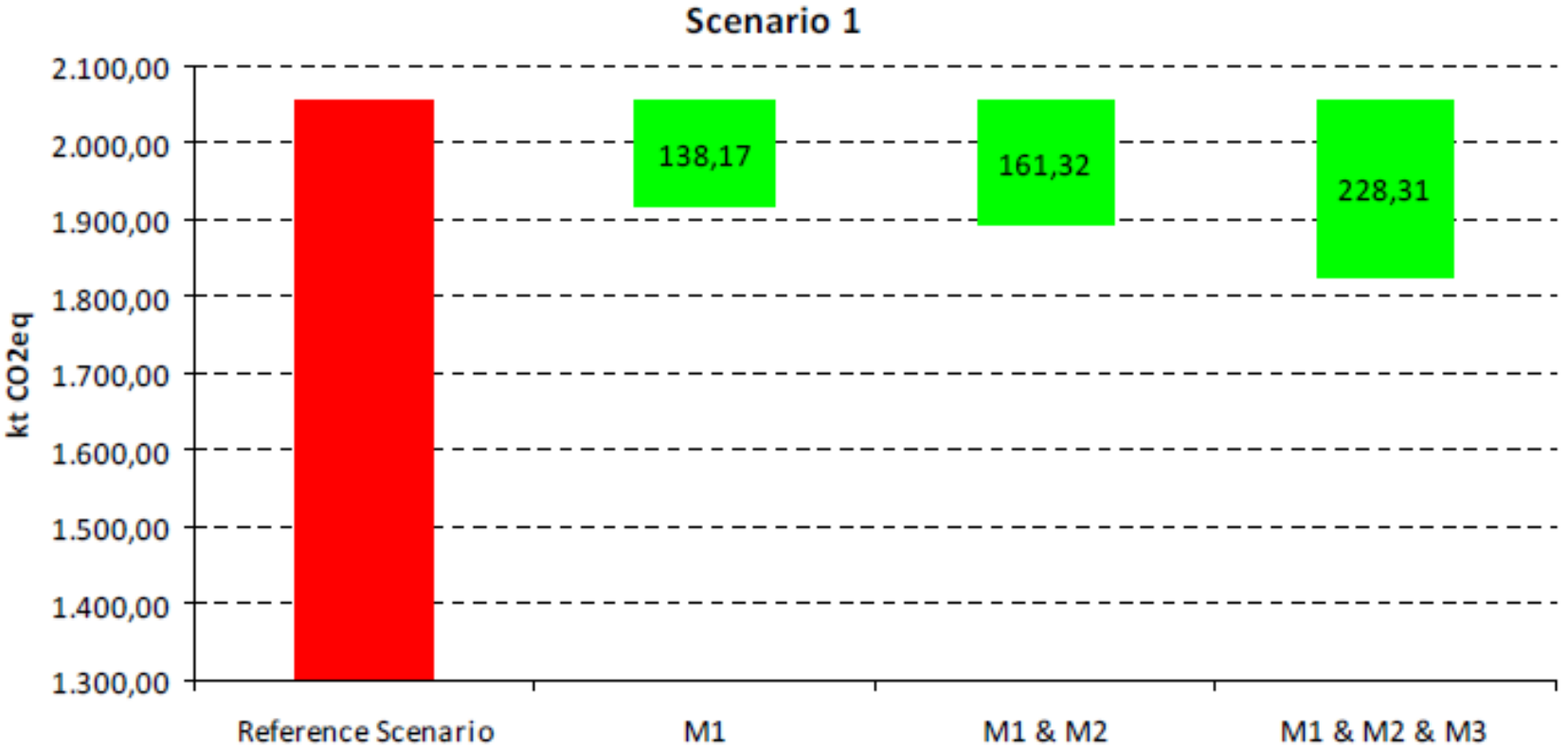
- All scenarios include the following mitigation measures:

- Measure 1: Rehabilitation of unmanaged landfills and construction of sanitary landfills with biogas recovery systems to serving 100 percent of the population by 2020
- Measure 2: Adoption of Directive 2008/98/EC targets (50 percent recycling of dry recyclables and source separation of bio-wastes) by 2020. The annual quantity of bio-waste collected separately is assumed to be equal to the European average (50 kg per capita) and corresponds to 20% percent of the total quantity of bio-waste. The bio-waste is treated at both composting and AD facilities.
- Measure 3: Full pre-treatment of residual mixed waste prior to landfill disposal.

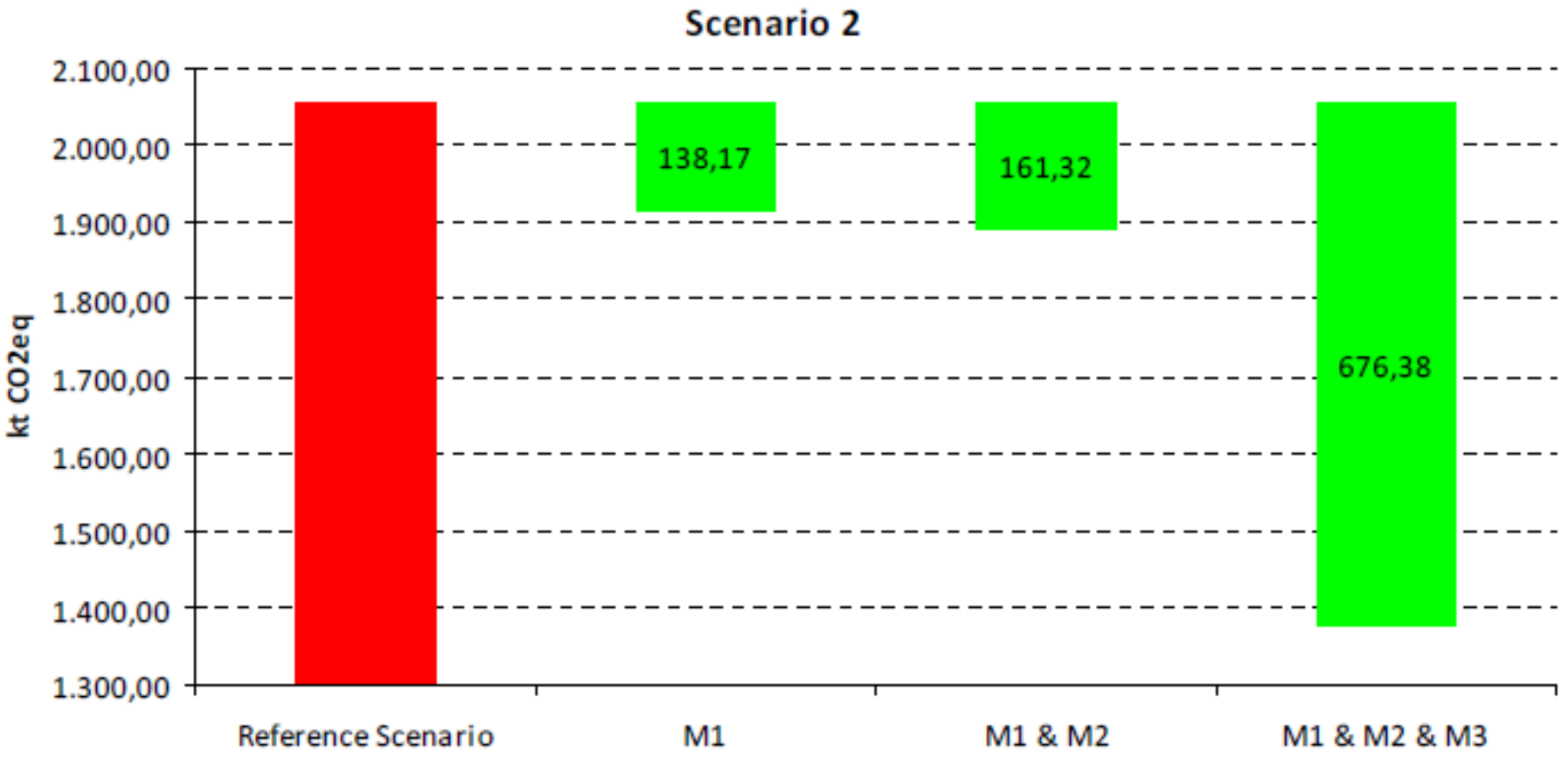
- What differentiates the four scenarios is the selected technology for the treatment of the residual mixed waste stream:
- Scenario 1: MBT with composting of the bio-stabilised organic fraction and incineration of RDF in waste-to-energy facilities with fluidised bed incinerators.
- Scenario 2: MBT with AD of the bio-stabilised organic fraction and incineration of RDF in waste-to-energy facilities with fluidised bed incinerators.
- Scenario 3: Bio-drying and incineration of SRF in waste-to-energy facilities with fluidised bed incinerators.
- Scenario 4: Incineration of mixed waste in waste-to-energy facilities with grate combustors.

The mitigation potential for the year 2020 (mid-point of the 2010–2030 period) - 228,000 tonnes of CO_2-eq in Scenario 1 (-11 percent) to 676,000 tonnes of CO_2-eq in Scenario 2 (-33 percent) compared to the reference scenario.

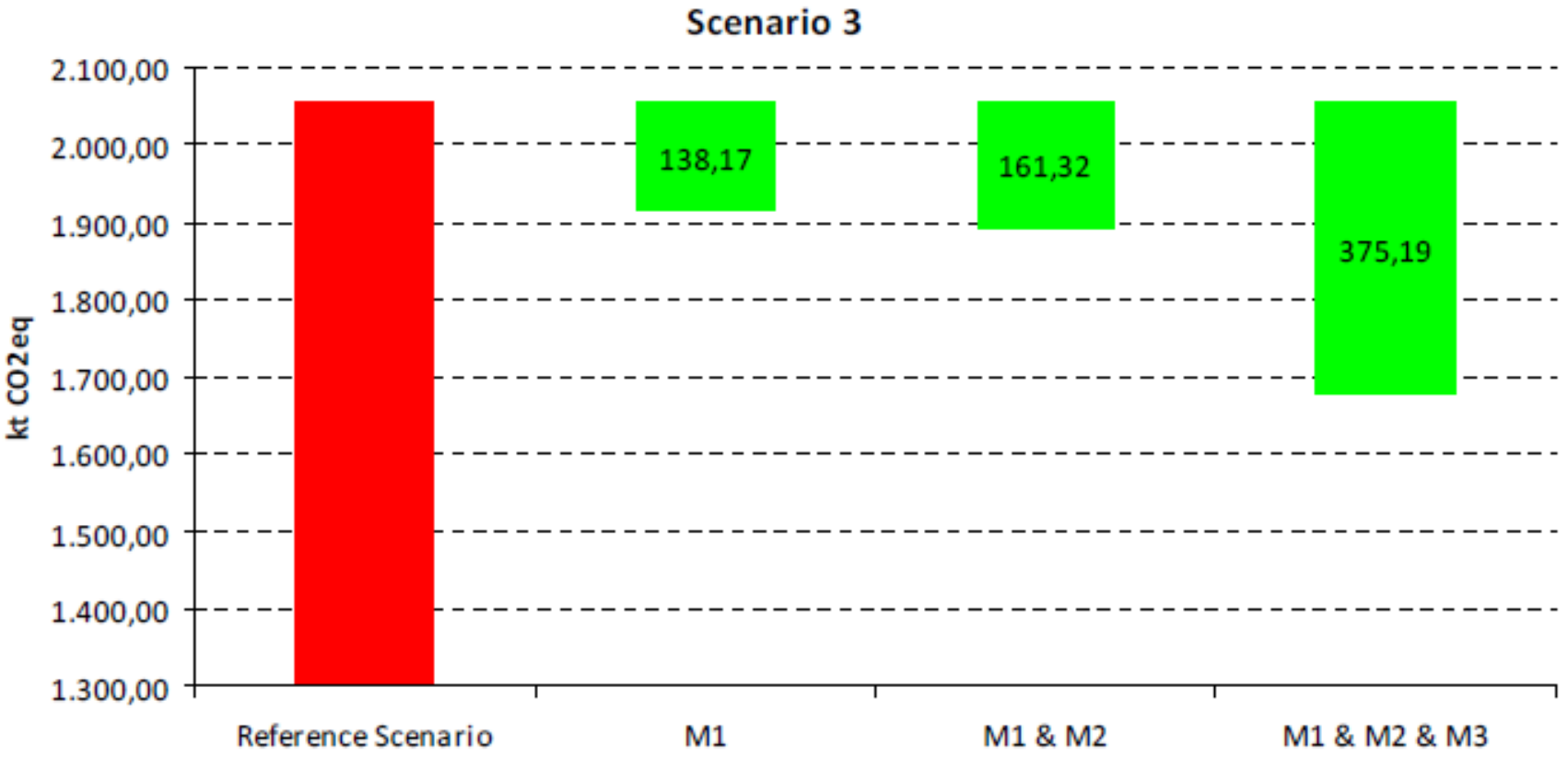
Scenario 1: MBT with composting of the bio-stabilised organic fraction and incineration of RDF in waste-to-energy facilities with fluidised bed incinerators.



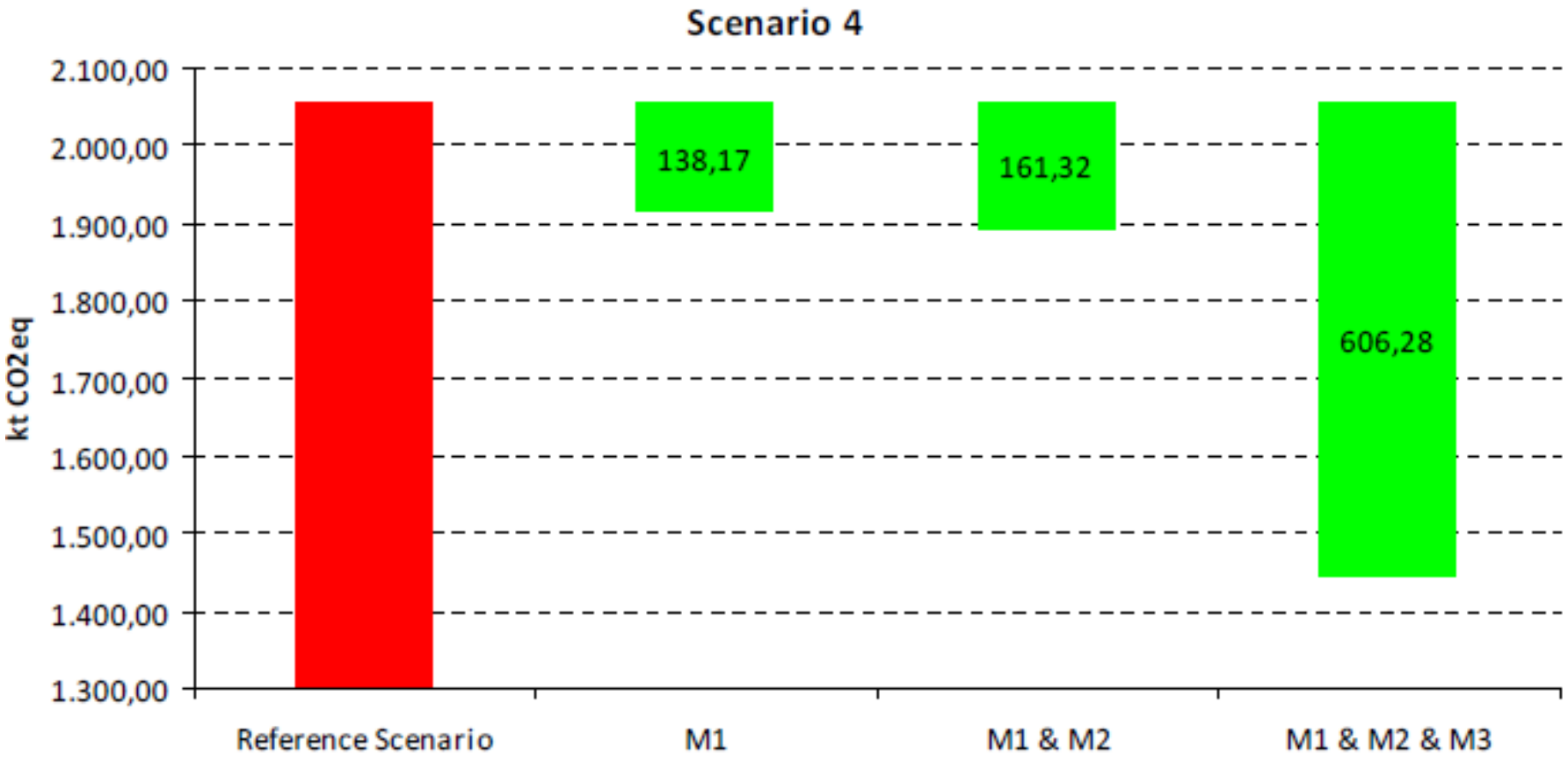
Scenario 2: MBT with AD of the bio-stabilised organic fraction and incineration of RDF in waste-to-energy facilities with fluidised bed incinerators



Scenario 3: Bio-drying and incineration of SRF in waste-to-energy facilities with fluidised bed incinerators.



Scenario 4: Incineration of mixed waste in waste-to-energy facilities with grate combustors.



Important Remarks

- NC to the UNFCCC as strategic national documents provide information on current situation in climate change field
- Development and submission of the NC to the UNFCCC Secretariat is one of obligations prescribed by the UNFCCC to all Parties.
- Serbia is currently under development of the SNC that will include mitigation programme in the future period, as well as framework mitigation strategy.
- One of the most important priorities in the EU's development is combating climate change related activities.
- Combating climate change determinates the EU energy sector development for a long period, while it started to make great impacts on development of sectors as transportation, agriculture etc.
- Clear climate change policy that has efficient implementation among crucial requests for the EU accession
- Prioritetni korak je izrada Strategije prilagodbe klimatskim promjenama