

Projection of a baseline scenario until 2030

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The concept

- 1) Development of a baseline scenario until 2030:
 - a) emissions for a 2012 base year (and corresponding fuel mix data) are to reflect emissions in NC3 modelling;
 - b) As a default, trends from the PRIMES model are to be used for projections of energy intensity and activity levels;
 - c) A contribution from other sectoral models (in particular SLED electricity and buildings sector models if results are available in time);
 - d) Use of information from EBRD transport study
 - 2) Development of a mitigation scenario: assess potential measures and their costs and propose a set of low cost measures to go beyond efforts contained in the baseline.
- ⇒ Based on the above, analysis for demand side prepared in LEAP, supply side modelled separately using SLED electricity model
- ⇒ Additional data from AKBN related to fuel mix and sub-sectors/end uses

Residential sector

- Separate modelling in LEAP building on UNDP LEAP model and information from SLED model and data from AKBN
- Population 2.9 → 2.79 between 2012-2030
- Household size 2.96 → 2.19
- Residential floor area 25 → 35m² per person and share of partial space heating reduced
- Hot water use growth rate 1%, appliance growth rate 5% per year, cooking constant, lighting reduced due to change to CFL
- Fuel mix data from AKBN and assumed unchanged per end use, but changes in total residential sector due to different growth rates of different end uses
- Results almost identical to PRIMES model for total energy demand

Service sector

- Fuel mix data from AKBN and assumed unchanged
- Floor area growth in service sector 1% for public buildings and 2% for commercial
- Intensity of electricity...

Industry

- Not enough information to double check PRIMES model with own modelling
- GVA and energy intensity values taken from PRIMES
- PRIMES based on assumption of 3% GDP growth with industrial GVA growth between 0.92% to 4.18% with overall rate of 3.01%
- Assumes improvement in energy intensity (energy/GVA) in all industrial subsectors between 0.01% to 3.40%
- Fuel mix data from AKBN and assumed unchanged
- Process emissions grow at rate of GVA growth

Transport

- Attempt was made at transport sector modelling based on EBRD, however:
 - EBRD of limited scope (only interurban data) and not possible to separate passenger and freight transport
 - EBRD also not compatible with data received from AKBN
 - AKBN data also not internally consistent
- PRIMES assumes:
 - activity growth of 3% in pkkm and 3.26% in tkkm
 - 1.2% improvement in toe/pkkm and 0.86% improvement in toe/tkkm
- Fuel mix data for transport subsectors from AKBN

Agriculture

- PRIMES shows decrease followed by increase in energy use, NC3 UNDP/USAID LEAP model shows constant level of energy use
- Latter was retained

Electricity sector

- SLED model

Total baseline CO2 emissions, non-biogenic, not including LULUCF

Sector	2012	2015	2020	2025	2030
Residential and service	263	284	313	345	386
Industry	1055	1147	1331	1638	2156
Transport	2,397	2,603	2,873	3,109	3,437
Agriculture	225	256	289	324	296
Non Energy Use	101	101	101	101	101
Electricity production	0	0	0	0	7
Total	4,041	4,391	4,907	5,517	6,383

Uncertainties

- large uncertainties in base year data, including energy consumption data at sectoral level, activity data (e.g. related to the output of industrial subsectors or the performance of the transport sector), and inconsistencies between different data sources;
- Inventory only for 2009, different data in excel than in inventory report, 2012 emissions lower in our calculations than inventory in 2009;
- uncertainties in future evolution of emissions are high where high economic growth and ongoing structural and socio-economic change;
- uncertainties related to developments in emissions that may be caused by a single large installation;
- the limited amount of time available to address these uncertainties and the lack of resources to verify existing data sources in order to improve quality.

Thank you for your attention!

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