Session 3: IPCC Inventory Software for National GHG inventories – New Functionalities in the Energy Sector

SBSTA - 56

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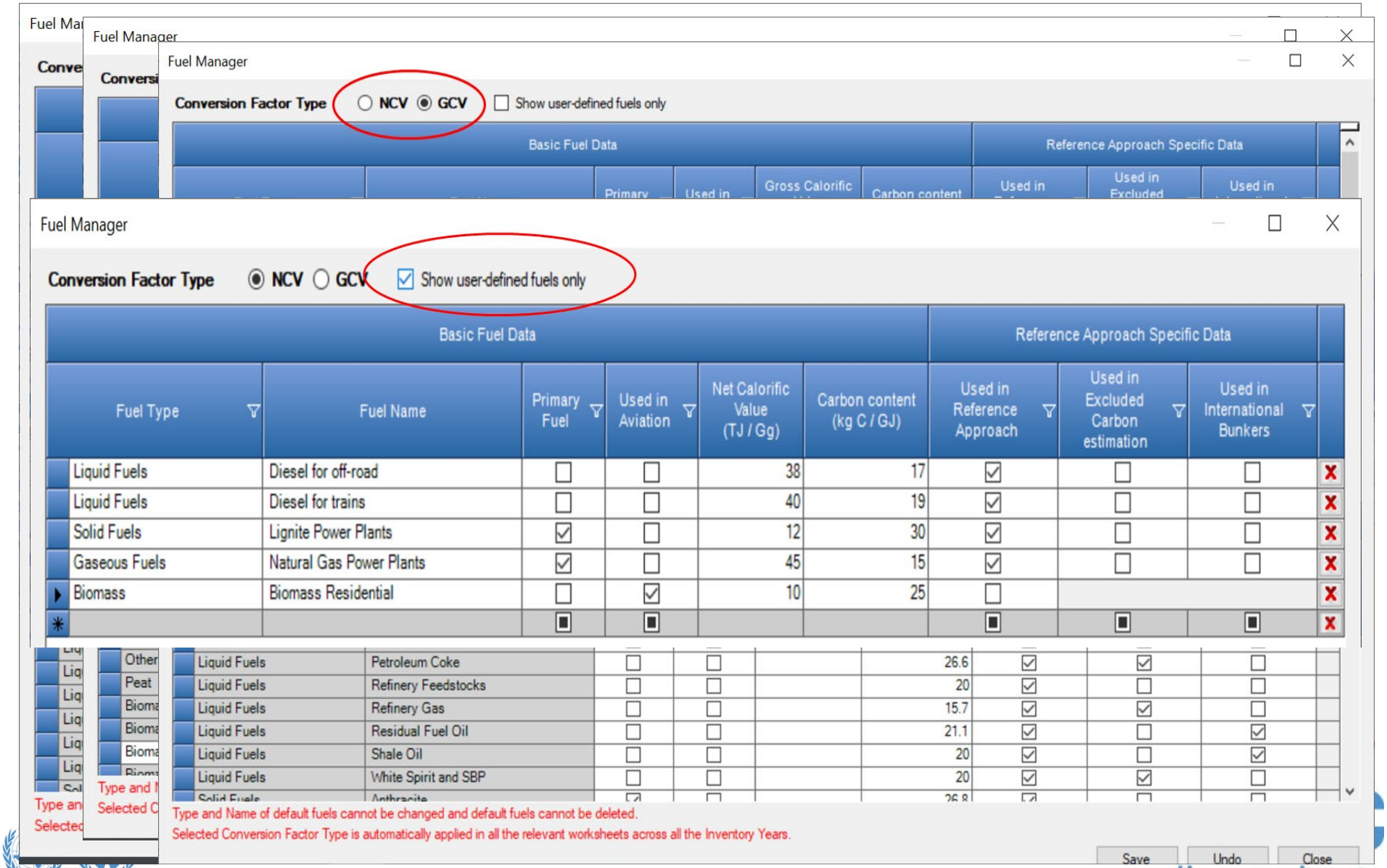
Overview of elements upgraded

- ✓Fuel Manager
- ✓Stationary Combustion
- ✓Road Transportation
- ✓Railways
- ✓Off-road transportation
- ✓Fugitive – Solid – Abandoned mines
- ✓Fugitive – Oil – Venting
- ✓Fugitive – Oil – Flaring

Fuel Manager

- Contains main parameters on fuels, i.e. fuel type, calorific value, carbon content- needed to estimate GHG emissions from combustion
- Allows input of user-defined fuels and their parameters
- Information from fuel manager transfers to all corresponding worksheets
- In any relevant worksheets to estimate GHG emissions from source-categories where fuels are used, if IPCC default fuels are selected, the parameters are filled automatically in the worksheet

Fuel Manager



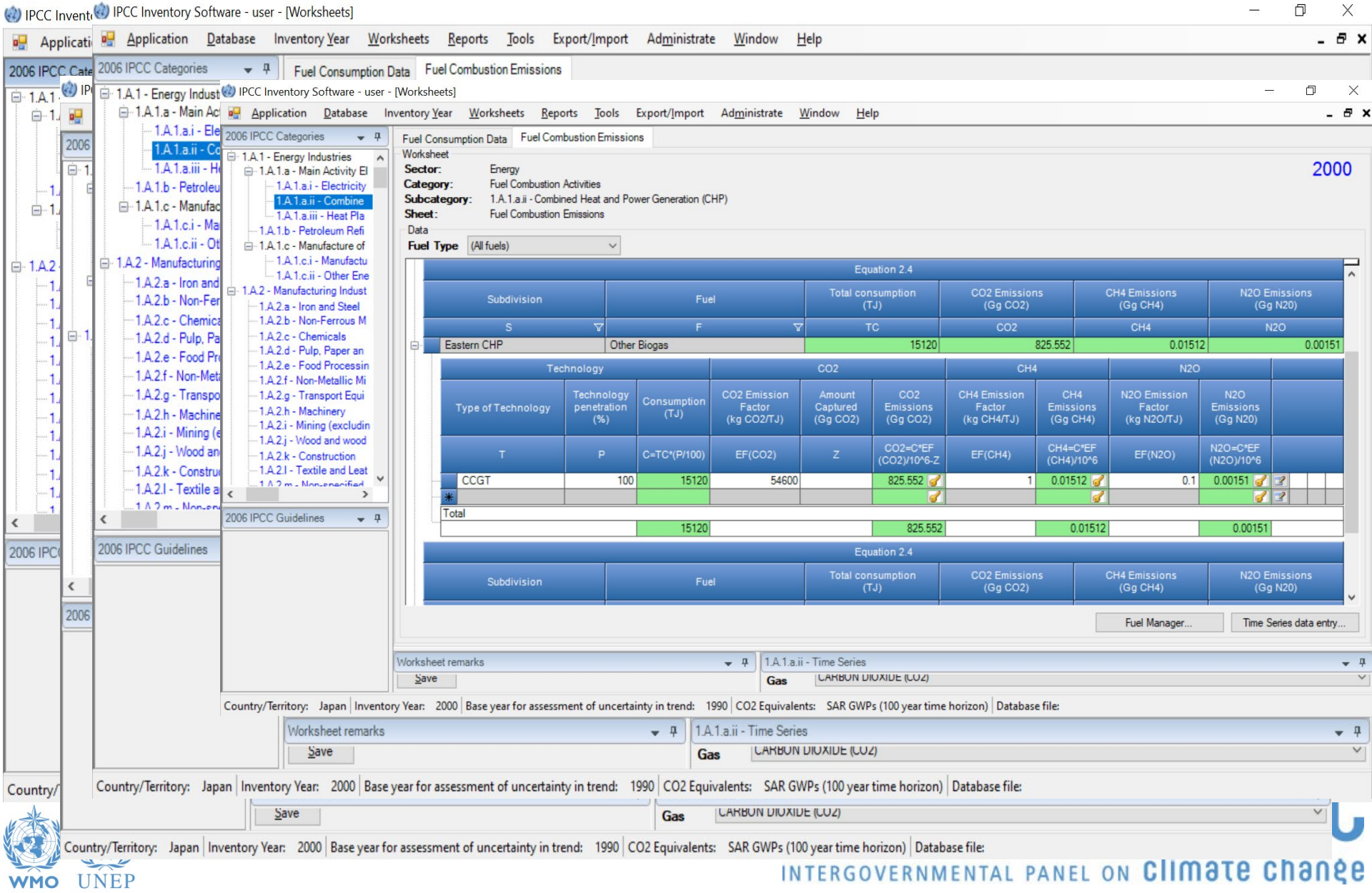
Stationary Combustion

2 worksheets are provided to estimate emissions

A. **Fuel Consumption Data** - subdivision, fuel, consumption amount, units, conversion factor
   - consumption units can be selected from the defaults (Gg, TJ) - in this case conversion factor being filled automatically from Fuel Manager
   - or entered directly whatever unit is provided – and conversion factor thus be entered manually

B. **Fuel Combustion Emissions** – technology type and penetration rate by subdivision/fuel, EFs for each technology/fuel
   - click "+" at left to expand subdivision and fill in data
   - Technology type can be left "unspecified" (e.g. Tier 1) or compiled with several ones (if available)
   - All technology penetration rates should sum up to 100% for each fuel in subdivision

Stationary Combustion

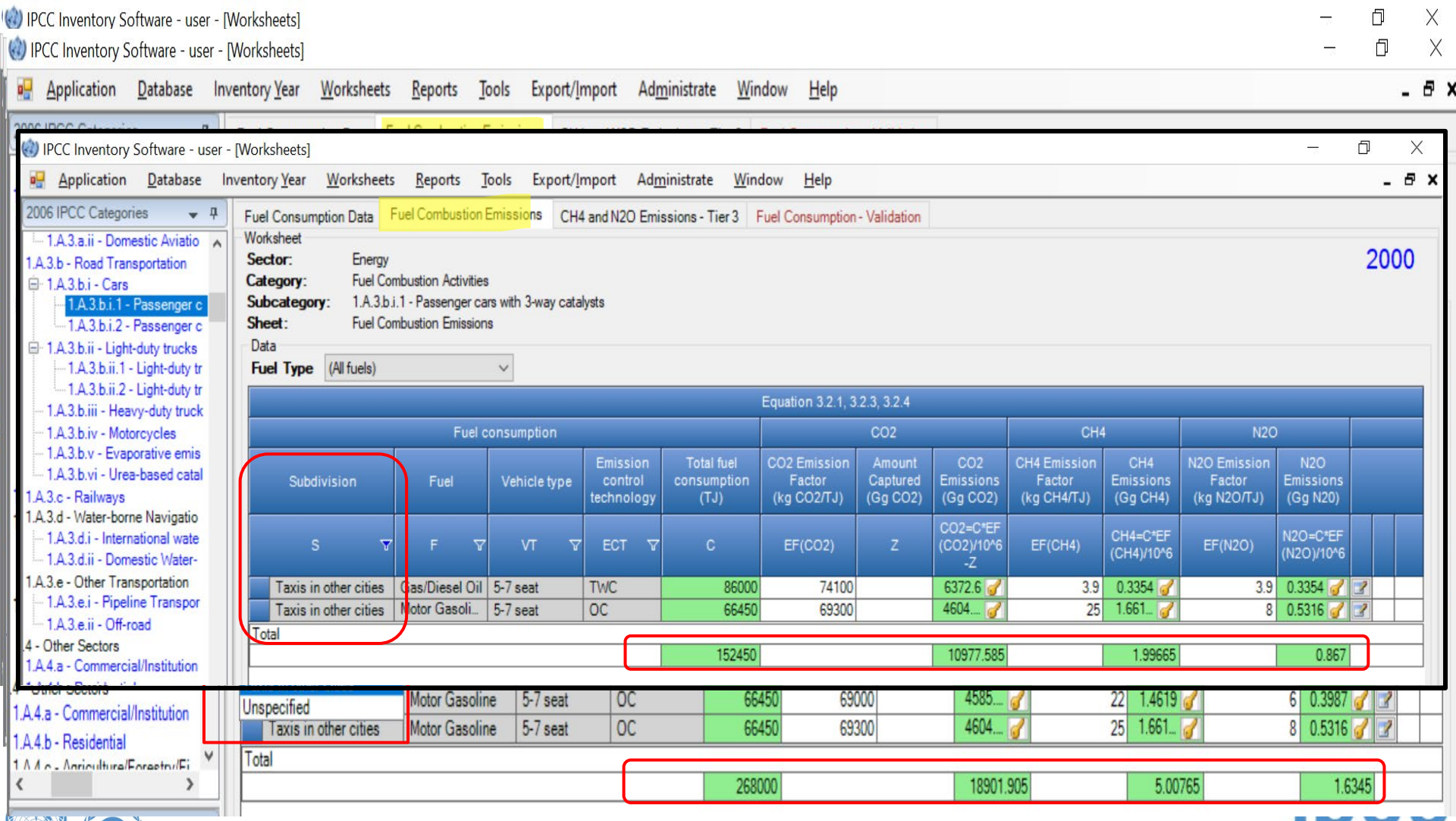


Road Transportation

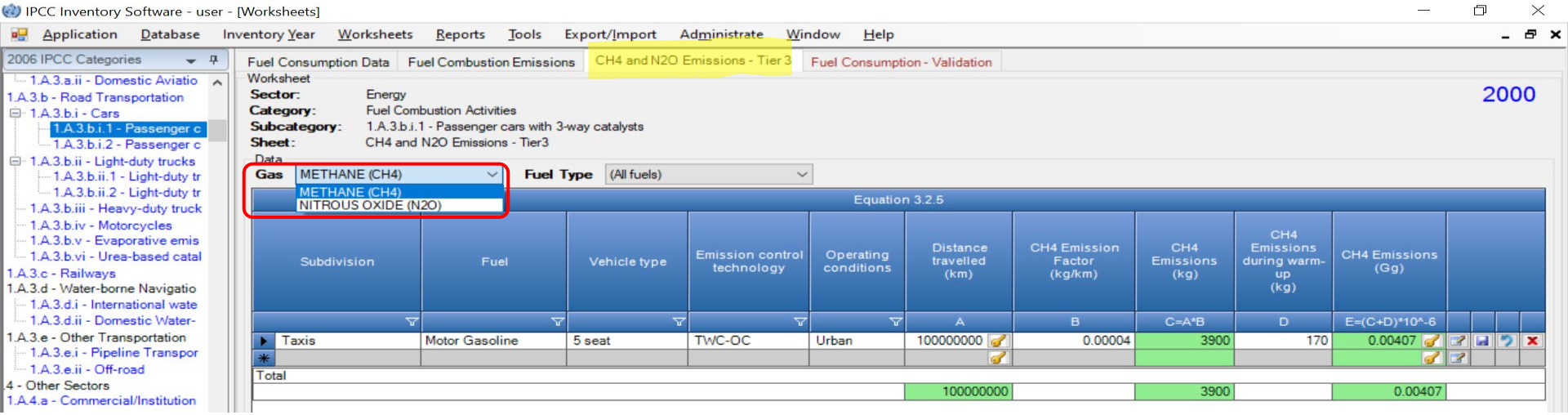
Tier 1, 2, 3 are implemented via 4 worksheets

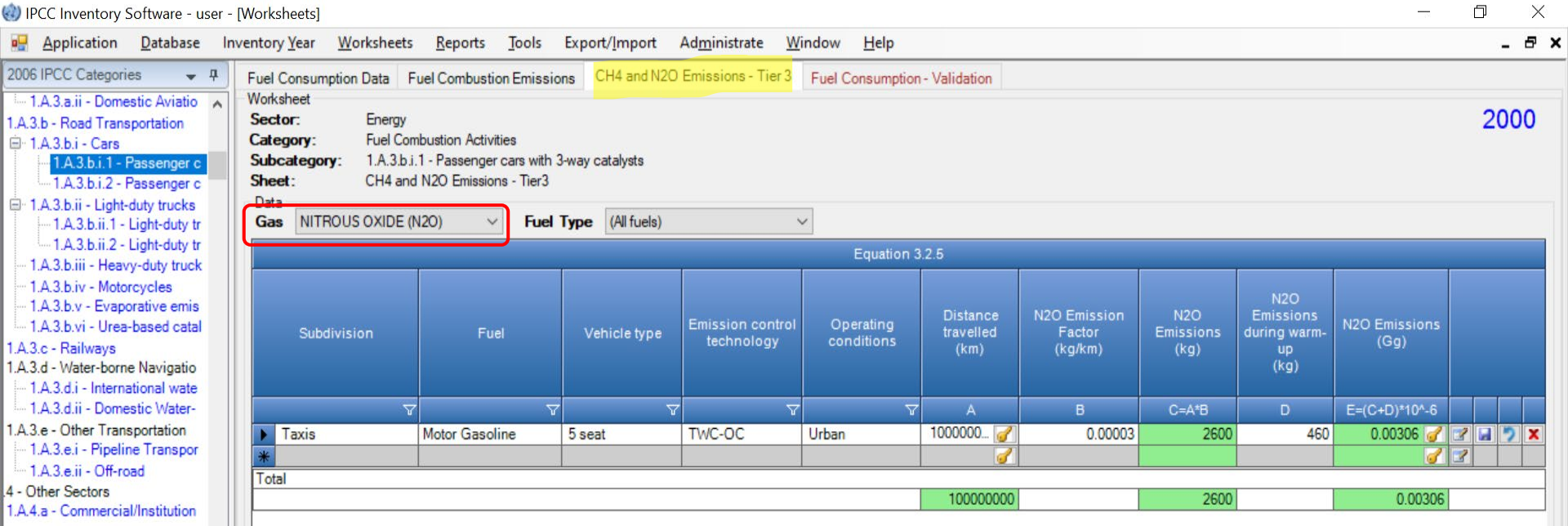
- **Fuel Consumption Data**: the amount of fuel consumed for each [fuel type/vehicle type/emission control technology]
- **Fuel Combustion Emissions**: EFs and calculation of emissions for each [fuel type/vehicle type/emission control technology]
- **CH_4 and N_2O Emissions – Tier 3**: used for Tier 3 estimations of methane and nitrous oxide considering the fuel type, vehicle type, emission control technology, operating conditions, distance travelled and emissions on cold start of the vehicle
- **Fuel Consumption – Validation**: estimation of fuel use from the distance travelled data based on the types of fuel/vehicle/road

Road Transportation

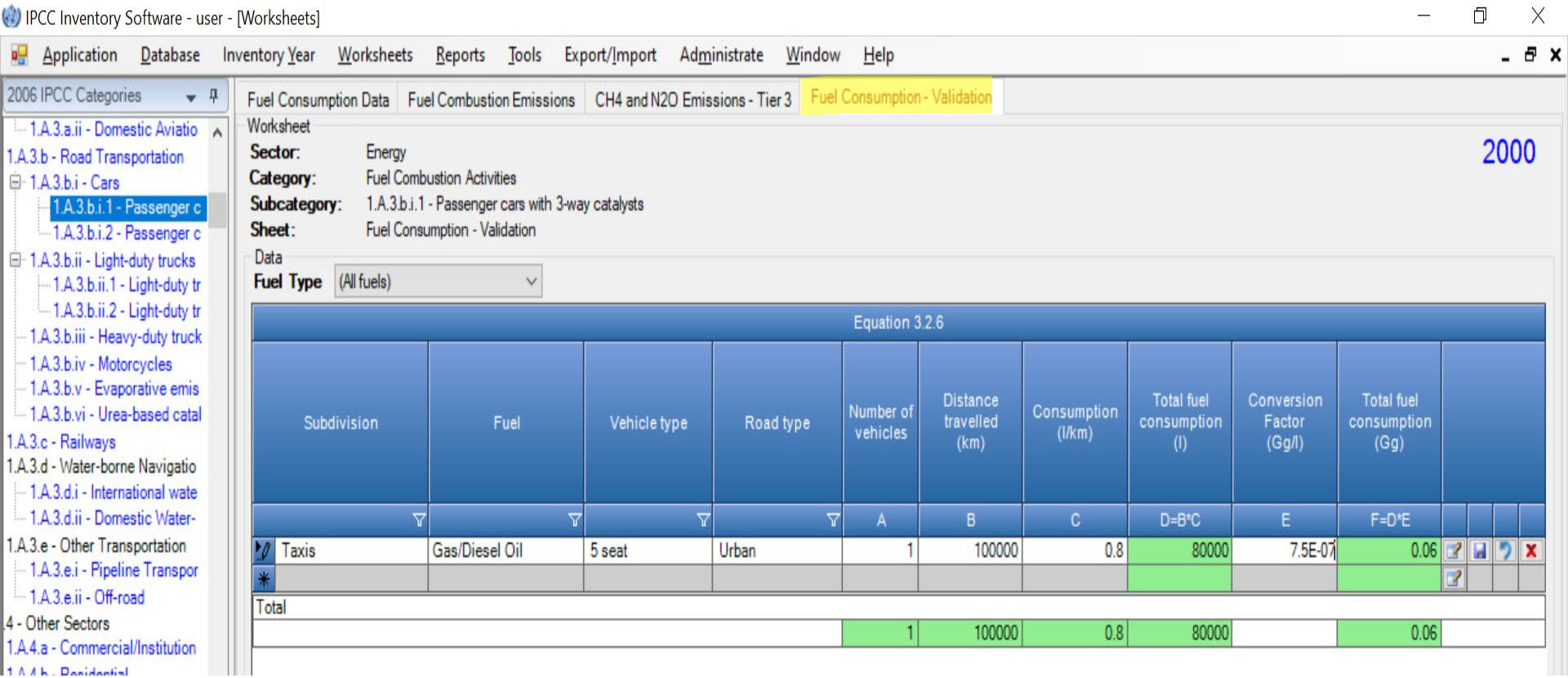


Road Transportation





Road Transportation



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Railways

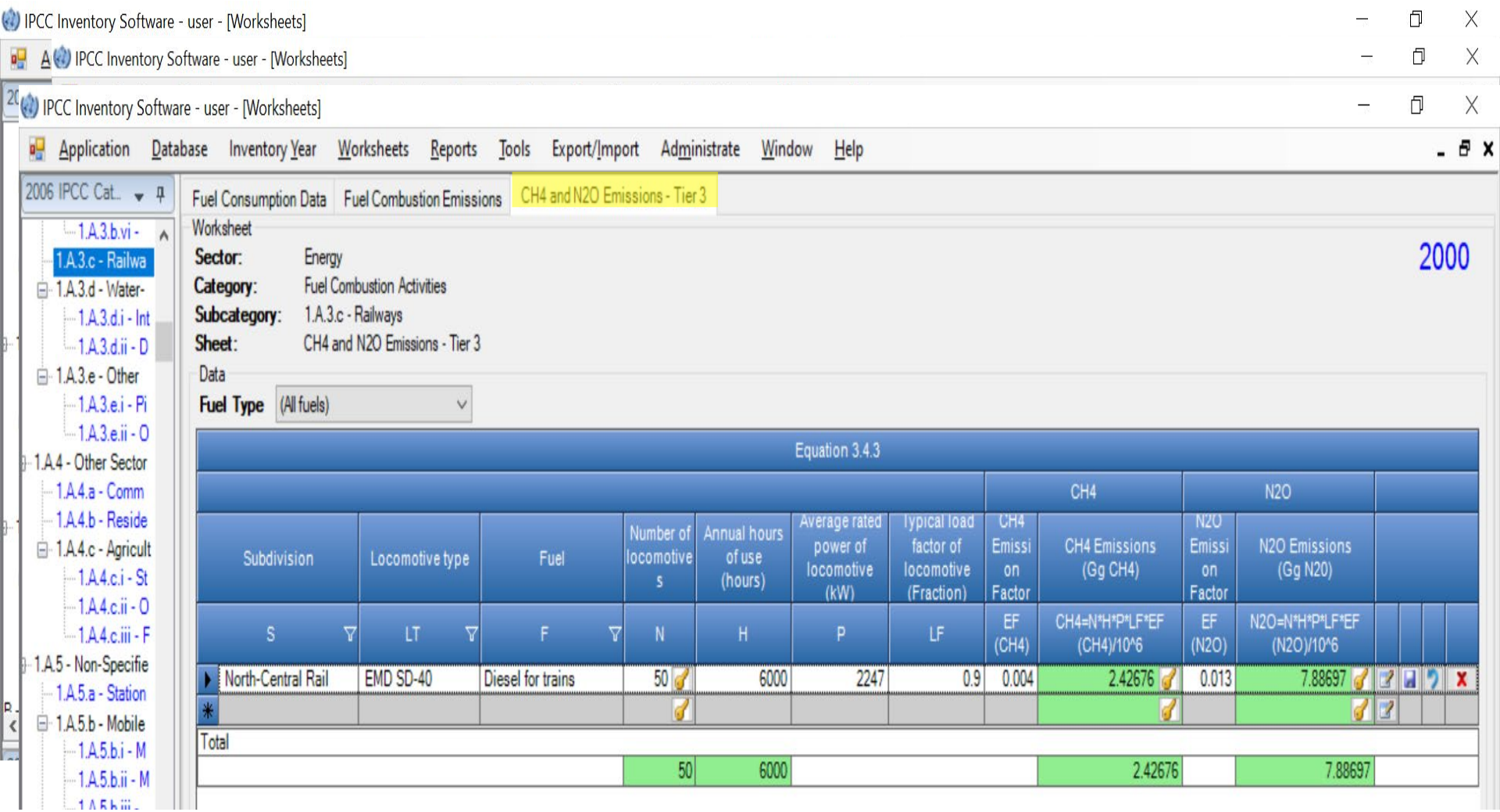
Tier 1, 2, 3 are implemented via 3 worksheets

- **Fuel Consumption Data**: the amount of fuel consumed for each [fuel/locomotive type], either entered directly, or calculated via Equation 3.4.5 based on the number of locomotives, specific fuel consumption and number of days in operation

- **Fuel Combustion Emissions**: EFs and pollutant weighting factors for each [fuel/locomotive type], calculation of emissions

- **CH_4 and N_2O emissions – Tier 3**: used for Tier 3 estimations of methane and nitrous oxide considering the fuel, locomotive type, number of locomotives, annual hours of use, rated power of locomotive and load factor of locomotive

Railways



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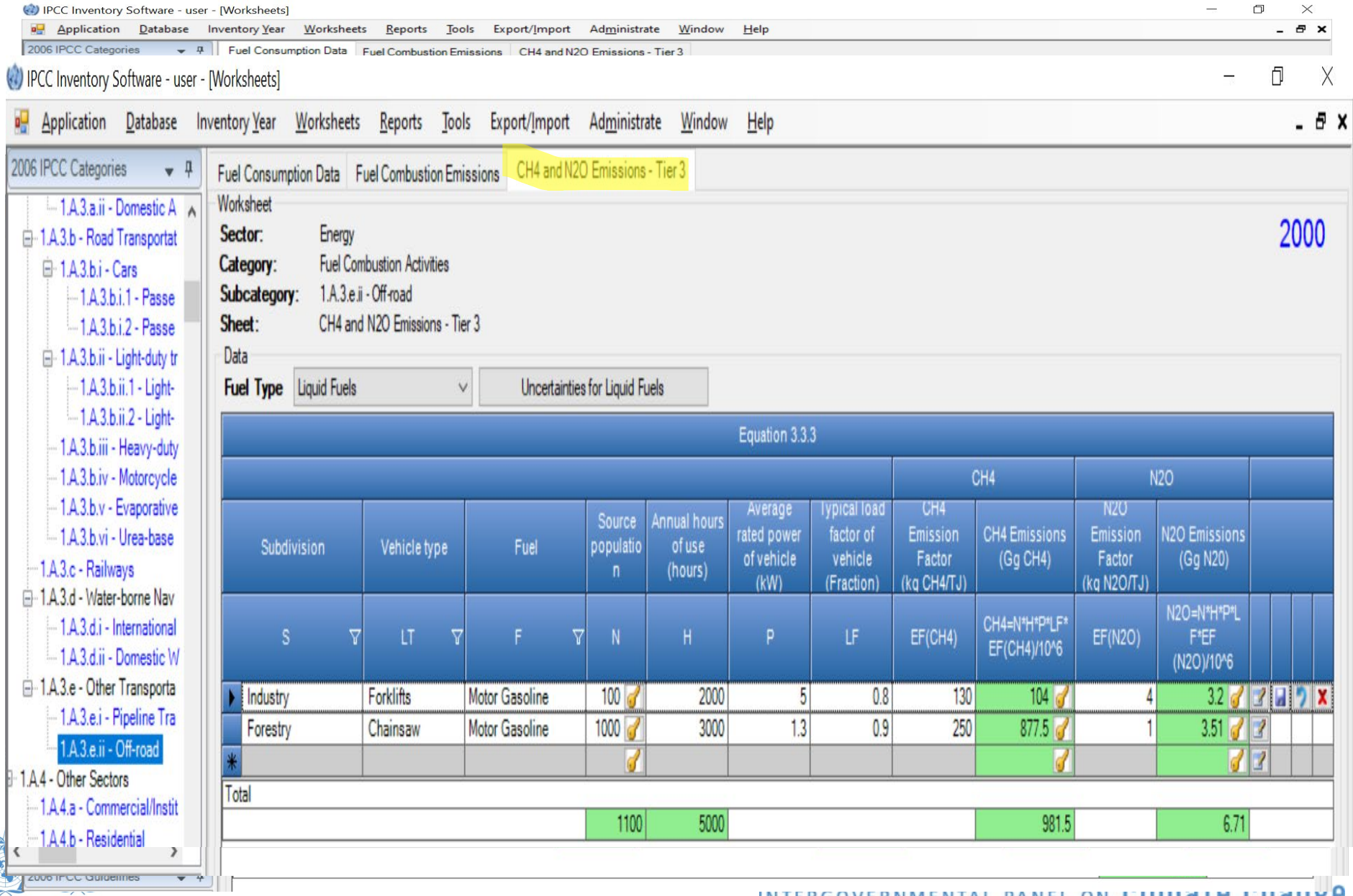
Off-road transportation

Tier 1, 2, 3 are implemented via 3 worksheets

- **Fuel Consumption Data:** the amount of fuel consumed for each [fuel/vehicle/equipment type]
- **Fuel Combustion Emissions:** EFs for each [fuel/vehicle/equipment type], calculation of emissions
- **CH4 and N2O emissions – Tier 3:** used for Tier 3 estimations of methane and nitrous oxide considering the fuel, vehicle type, number of vehicles, annual hours of use, rated power of vehicle and load factor of vehicle

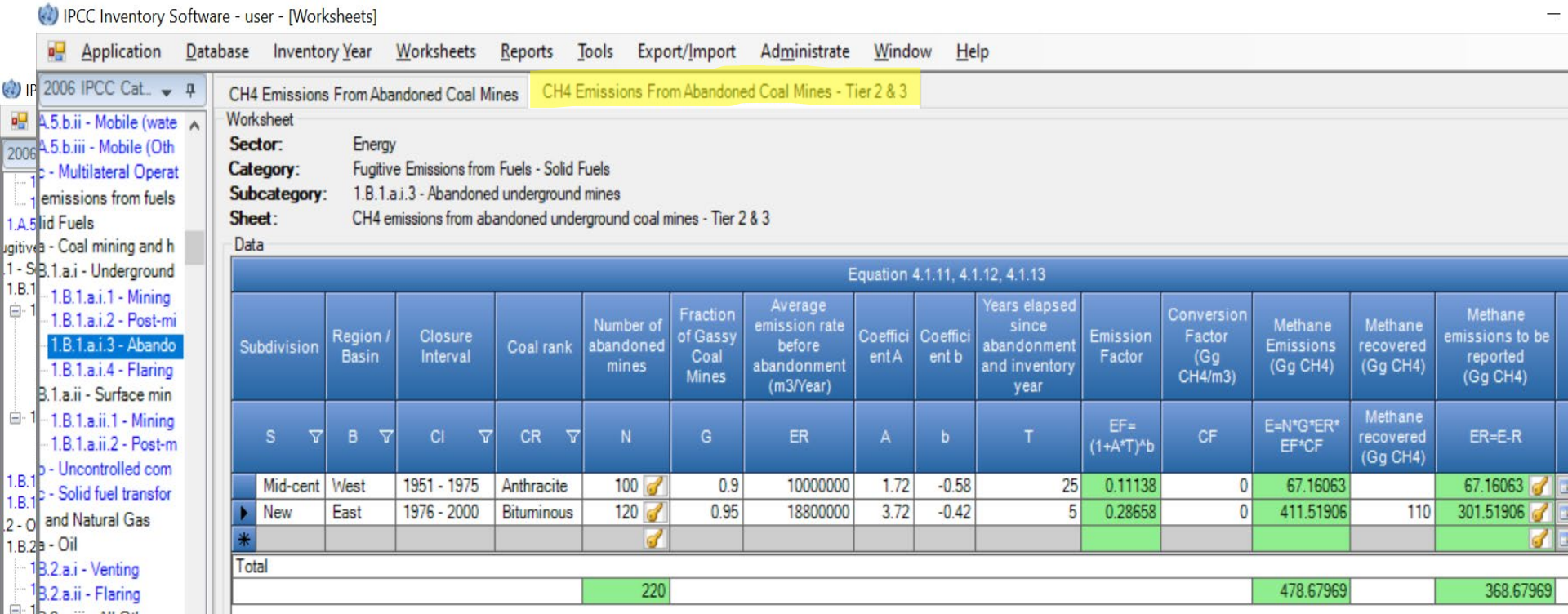
Off-road transportation



Fugitive – Solid – Abandoned mines

Tier 1, 2, 3 are implemented via 2 worksheets

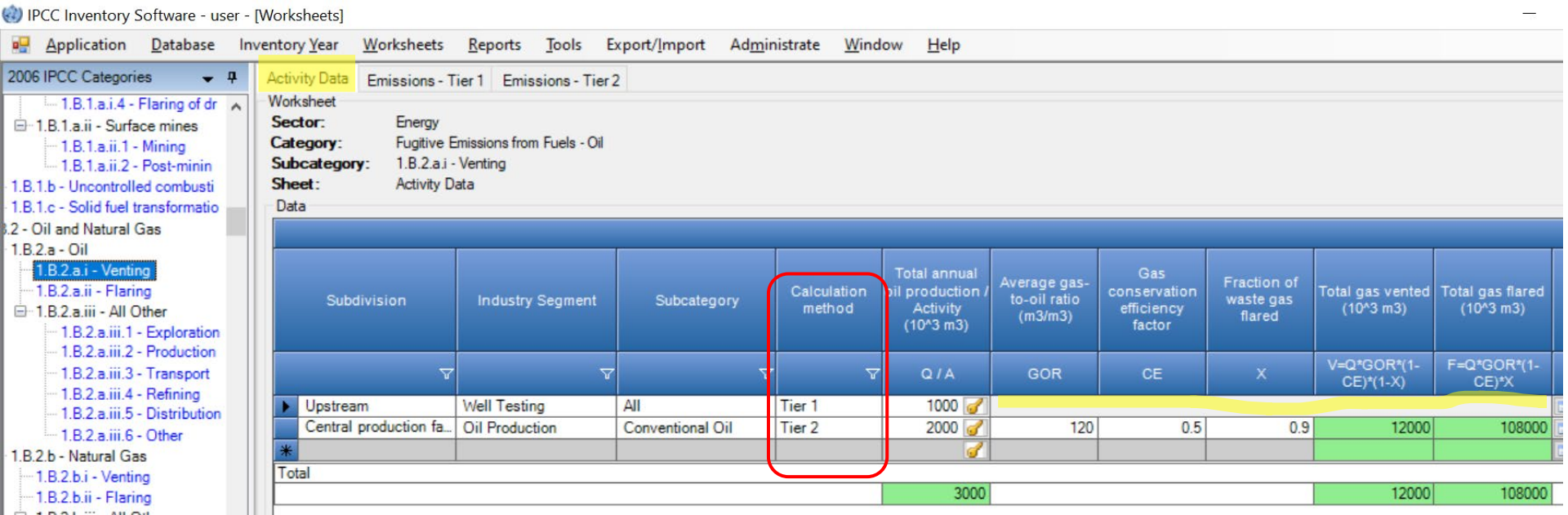
- **CH_4 Emissions From Abandoned Coal Mines**: counts for Tier 1 emissions based on time from closure, number of mines and fraction of gassy mines
- **CH_4 Emissions From Abandoned Coal Mines** – Tier 2&3: counts for Tier 2 and 3 methane emissions



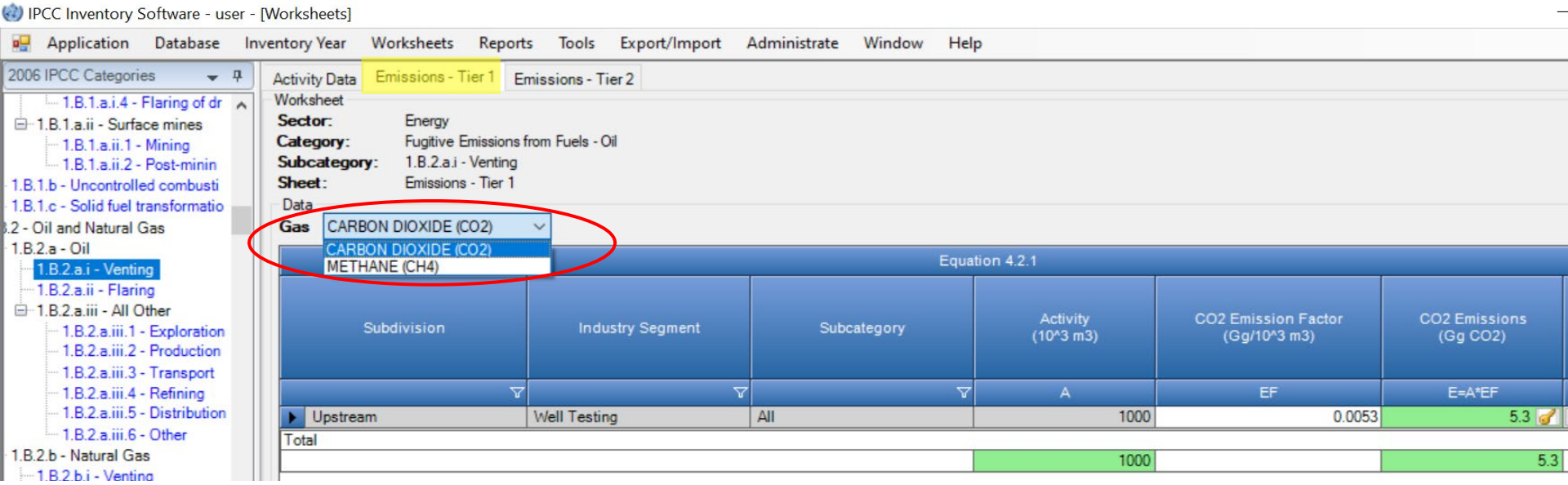
Fugitive – Oil – Venting

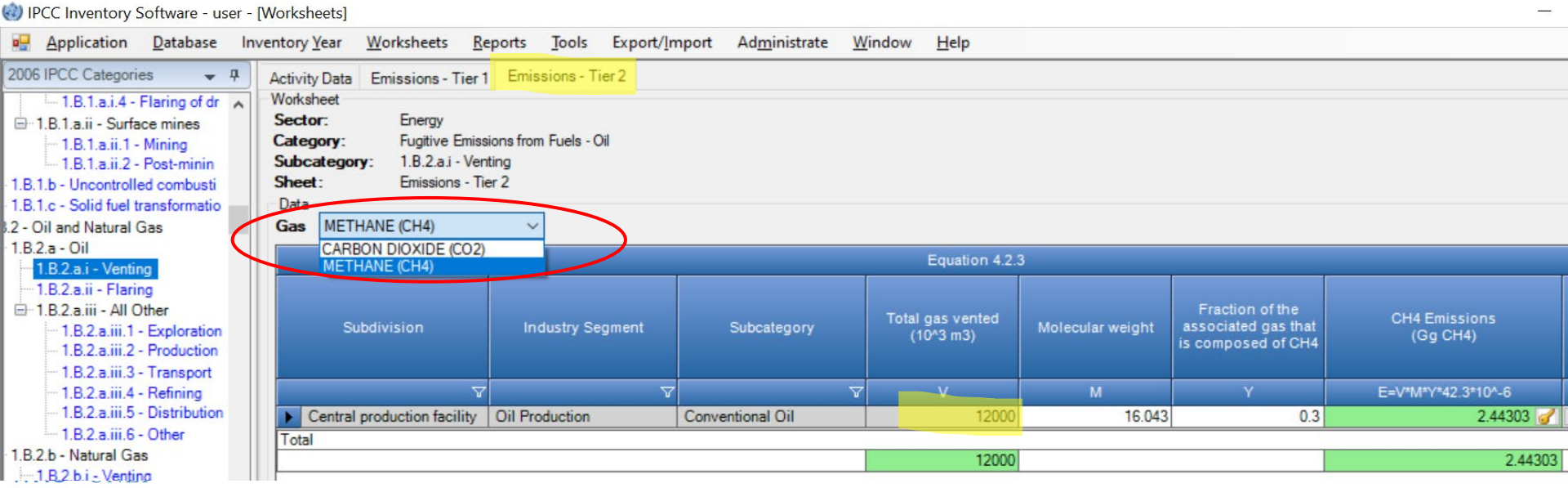
Tier 1 and 2 are implemented via 3 worksheets

- **Activity Data**: amount of oil production for each [subdivision/industry segment/subcategory], selection of calculation method Tier 1 or 2. This information transfers to "Flaring" category automatically and vice-versa
- **Emissions – Tier 1**: CO_2 and CH_4 emissions for Tier 1 for each [subdivision/industry segment/subcategory]
- **Emissions – Tier 2**: CO_2 and CH_4 emissions for Tier 2 for each [subdivision/industry segment/subcategory] based on the molecular weight and fraction of associated gas



Fugitive – Oil – Venting



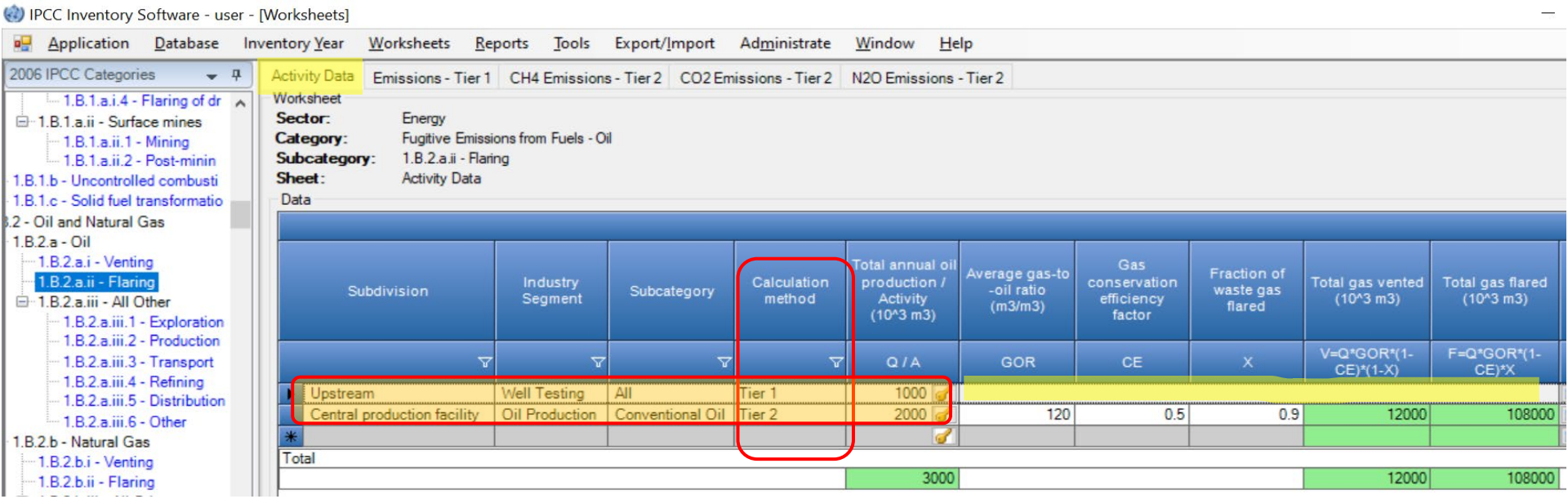


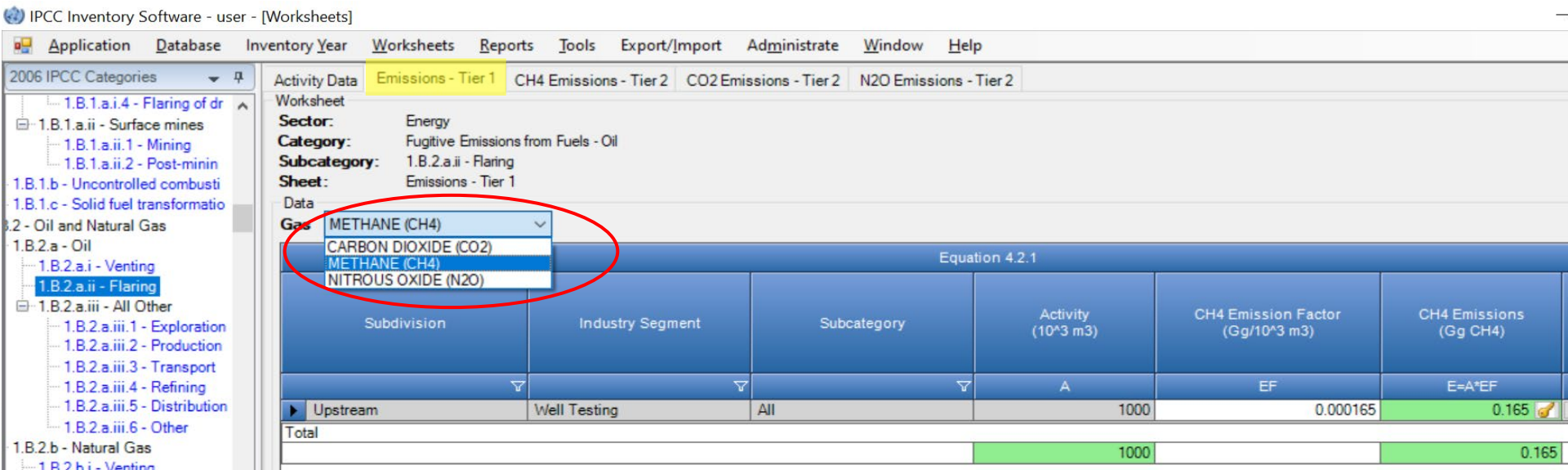
Fugitive – Oil – Flaring

Tier 1 and 2 are implemented via 5 worksheets

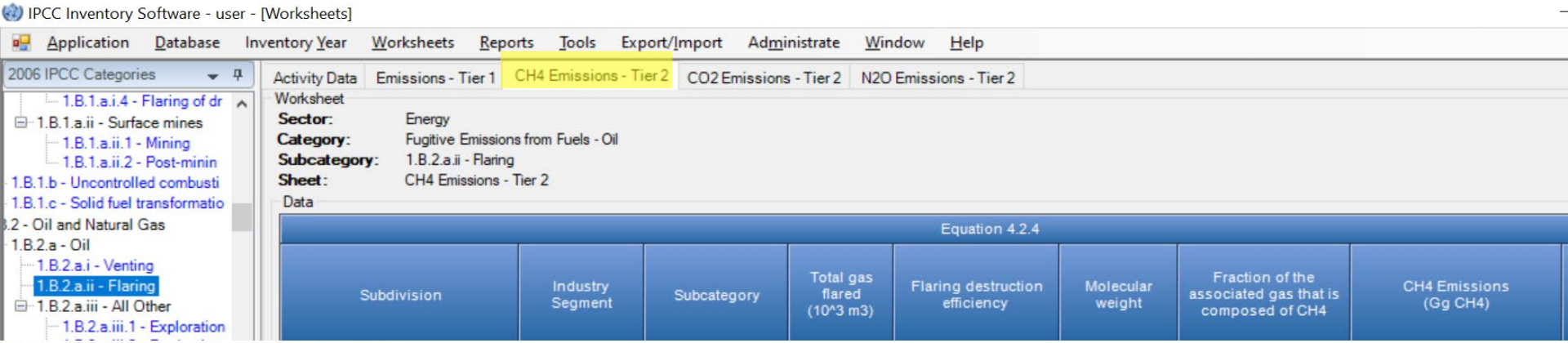
- **Activity Data**: amount of oil production for each [subdivision/industry segment/subcategory], selection of calculation method Tier 1 or 2. This information transfers to "Venting" category automatically and vice-versa
- **Emissions – Tier 1**: CO_2, CH_4 and N_2O emissions for Tier 1 for each [subdivision/industry segment/subcategory]
- **CH_4 Emissions – Tier 2**: CH_4 emissions for Tier 2 for each [subdivision/industry segment/subcategory] based on the flaring destruction efficiency, molecular weight and fraction of associated gas
- **CO_2 Emissions – Tier 2**: CO_2 emissions for Tier 2 for each [subdivision/industry segment/subcategory] based on the molecular weight, fraction of associated gas and fraction of non-CO_2 carbon of waste gas
- **N_2O Emissions – Tier 2**: N_2O emissions for Tier 2 for each [subdivision/industry segment/subcategory] based on the nitrous oxide EF

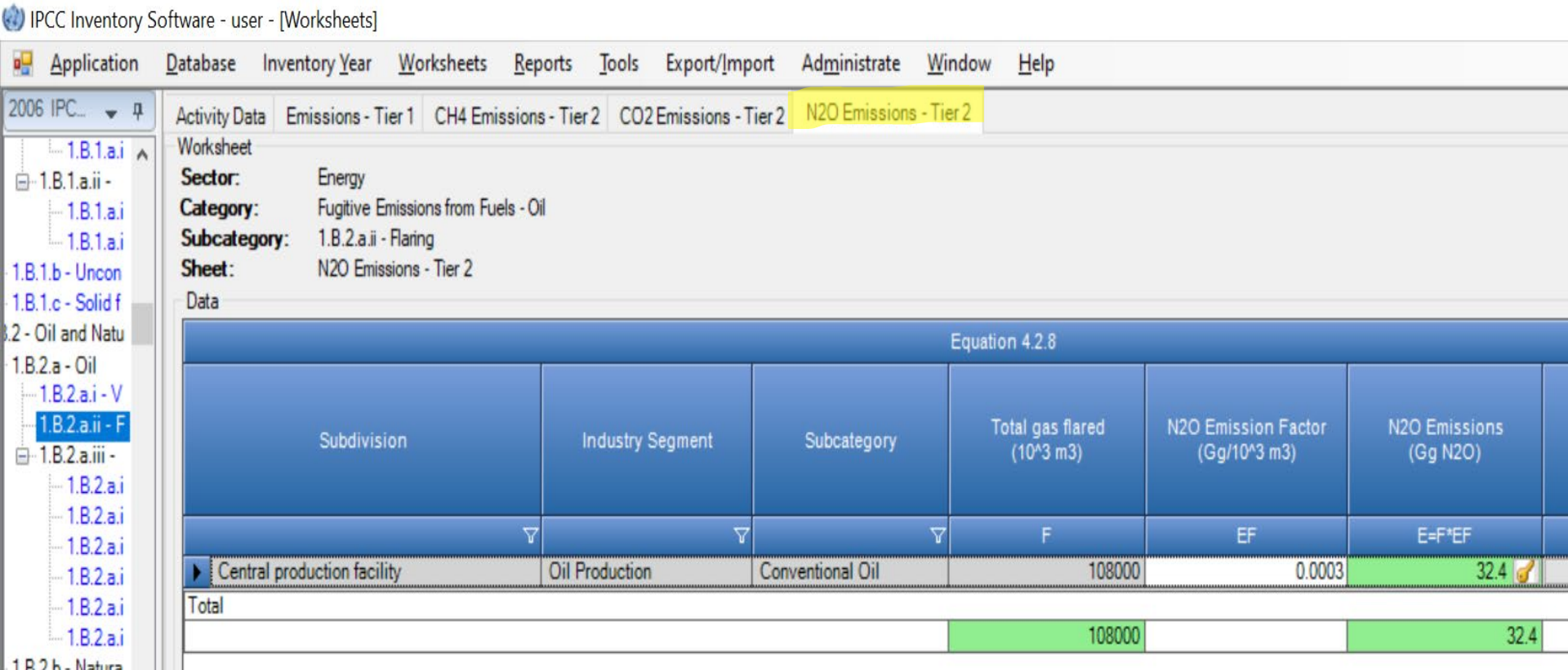
Fugitive – Oil – Flaring





Fugitive – Oil – Flaring





Thank you

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