



Research Activities for NIER-GHG Project

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Overview

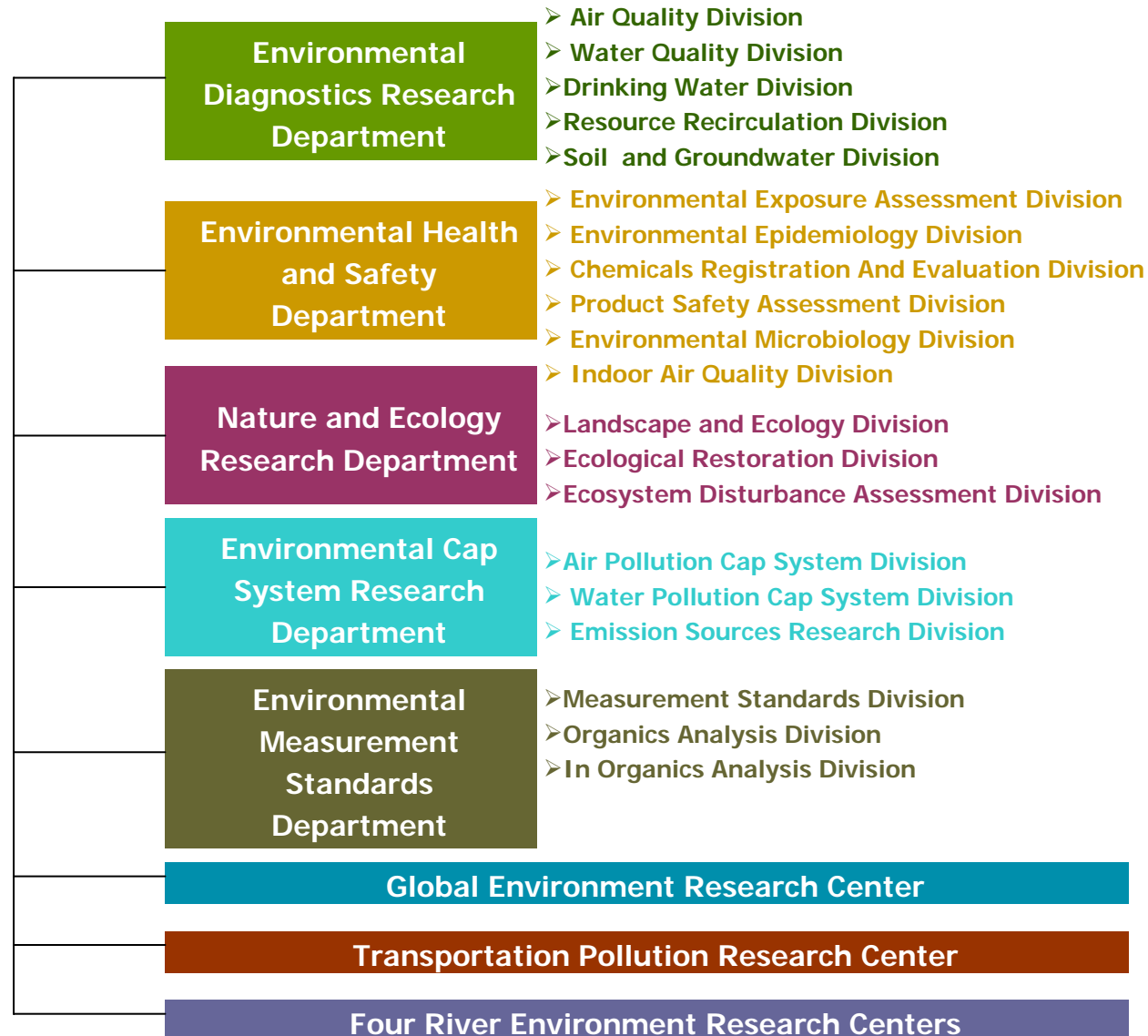
- GHGs are affected to global warming and climate change
- Many countries have to make an effort to reduce GHGs since Rio Summit in Feb 1992
- Especially, Kyoto protocol has pressured Annex I group to reduce GHGs with quantified emission limitation & reduction object
- Korea is not a member presently of Annex I group but it has been under constant international pressure to join the club
- IES-Korea program which is one of policies related with GHGs was initiated in 1999. It is important to know about reliable air emissions to make a reduction strategies and IES program implementation
- NIER has been estimate emission factors and inventories of GHGs since mid 90's, offering GHGs inventory data with IES research team

NIER-GHGs project is a joint project with Ministry of Environment and has been conducting to **develop of the national GHGs inventory and emission factors**

Organization of NIER (National Institute of Environmental Research)

● NIER is consist of 5 departments, 22 divisions and 6 research centers

● 2006 Total budget of NIER is about 38million dollars and number of staff is 263



Introduction of NIER-GHG Project

- Title : Development of Greenhouse Gas Inventory and Emission Factors in Korea
- Period : 2005.4 ~ 2008.3
- Budget : 1 million dollars (funding by Eco-tech 21 project of MOE)
- Co-Workers : NIER (Air Pollution Cap System Division),
TPRC (Transportation Pollution Research Center)
Seoul National University
Ewha womans University
- Objectives
 - GHGs emission data gathering and assessment
 - SOP of GHGs development and institutionalization
 - Plant specific emission data development
 - Prioritization and QA/QC of GHG emission data
 - Make a specific national GHGs emission factors of large fuel-consumption factories

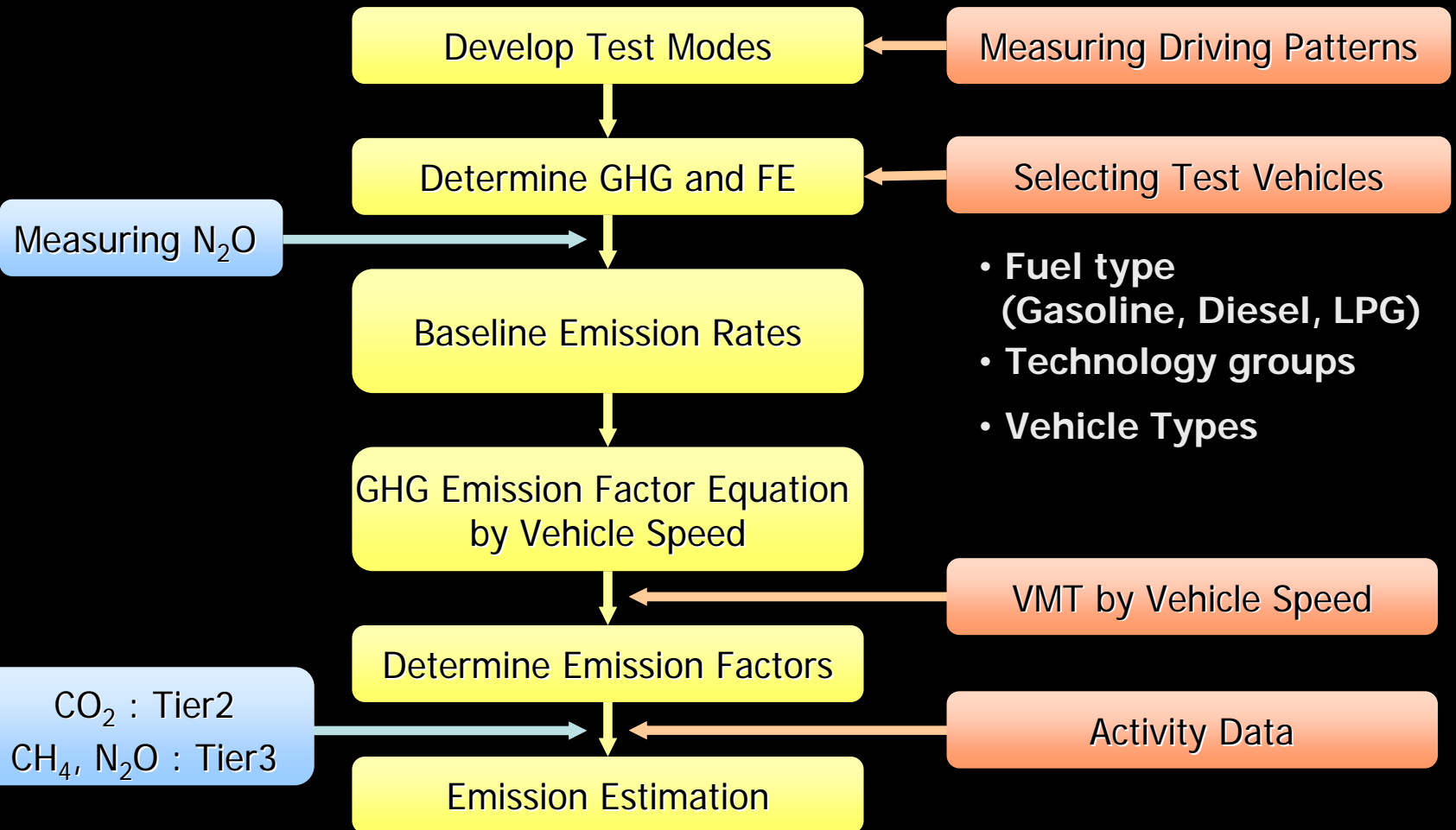
Major Research Activities of NIER-GHGs Project are

- To develop of **inventory and emission factors for CO₂**
 - Measuring CO₂ concentration in stacks (including feasibility study for CEMS)
 - Estimating emission factors and compare with IPCC results
 - Making a national specific CO₂ emission factors (Tier 2)
 - Evaluating a GHGs emission forecasting program (based on
- To develop of **inventory and emission factors for Non-CO₂ (N₂O, CH₄)**
 - Standardization of Non-CO₂ test method
 - developing Non-CO₂ gas measurement Standard Operating Procedure (SOP)
 - evaluating N₂O inventory in natural ecosystem
 - calculating emission by methane oxidation from forestry

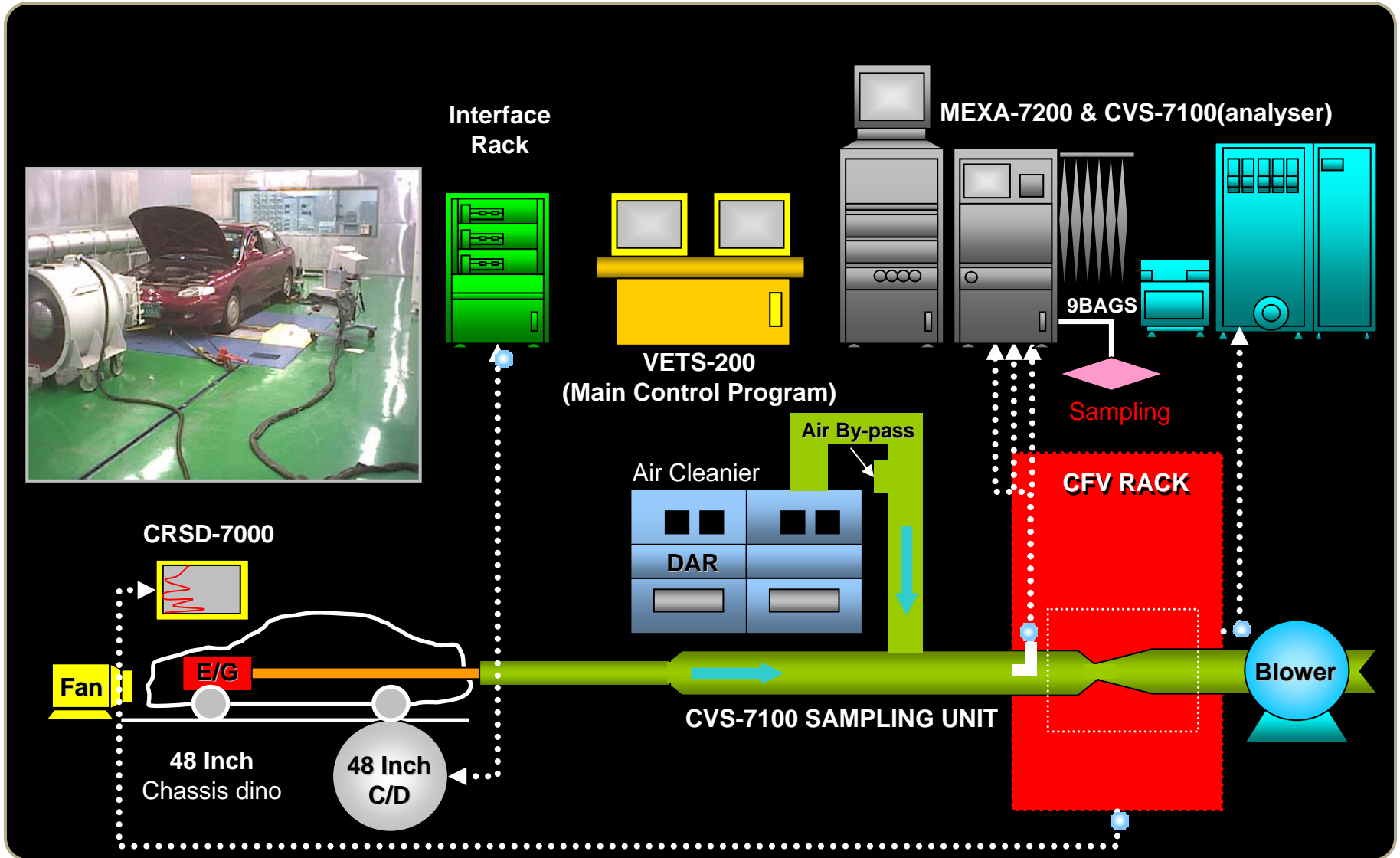
Major Research Activities of NIER-GHG Project are

- TO develop of **GHGs emission factors for mobile source**
 - Making standard method of CO₂, CH₄, N₂O from vehicle types
 - Estimating GHG emission methodologies for mobile source
(comparing Tire 1,2 and 3 method)
 - Developing GHG emission factors by vehicle types
 - Calculating GHG emissions for mobile source

Vehicle GHGs test Methodology



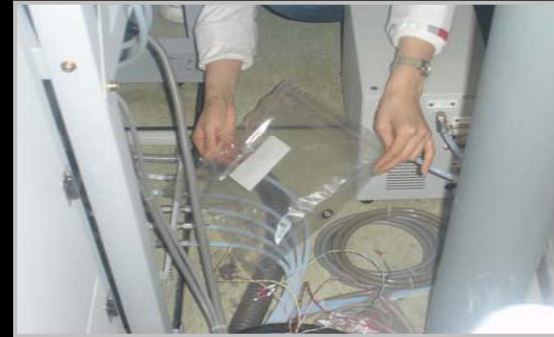
Flow diagram of vehicle GHGs emission measurement



Vehicle GHG measuring systems



Exhaust Gas Analyser



N₂O Sampling and Analysis

▪ Target Compounds

- GHG : CH_4 , CO_2 , N_2O
- Regulated Pollutants : CO , HC , NO_x , PM

Closing Remarks

- NIER-GHG project is a basic study to estimate GHGs emission factors for energy-consumed sources, water and waste treatment facilities, forestry, agriculture and etc.
- This study's result will be used to make a national report of GHGs emission and reduction strategies in Korea.
- IPCC recommended *good practice* that use their own GHGs emission factors or other estimation parameters.
- MOE-Korea has a responsibility to develop and manage of national GHGs emission factors through research committees mainly NIER.
- NIER is in charge of steering committees and hopes to share our experience and know-hows for GHGs emission factors research with other countries

A scenic view of a park with a lake, modern buildings, and a fountain. The image is split into two halves. The left half shows a modern cityscape with several high-rise apartment buildings and a traditional Korean pavilion on a small island in a lake. The right half shows a large, green park area with a traditional Korean pavilion, a fountain, and a large body of water. The background is a clear blue sky.

Thank You for
your attention!

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