Sector & GDP Based Intensity Targets
– Preliminary Analysis –

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Energy Modeling Forum Meeting
Tsukuba, Japan
December 2006

The views are solely those of the individual author and do not represent organizational views of IAE.

= Outline =

1. Introduction
2. Sector Based Intensity Targets
3. Scenarios
4. Results
5. Summaries and Future Works

1. Introduction

* Realistic Climate Policy

  Short-term Sector Based Intensity Target

  Industries, Power, Transportation etc.

  Voluntary Actions and/or Regulations

  >>>>>> transition >>>>>>

  Long-term Climate Target

  To avoid irreversible environmental impacts

2. Sector Based Intensity Targets

* Power Generation

GHG Emissions / Output → kgCeq/kWh

* Transportation

GHG Emissions / km

=(GHG Em. / fuel consumption) * (fuel / km)

fuel choice

weight saving
aerodynamics
rolling friction
powertrain choice
(e.g. ICE hybrid, EVs, FCVs)

→ tonCeq/ TOE * TOE/km

* Other Sectors
-Aggregated approach

GHG Emissions / GDP (kgCeq/$)

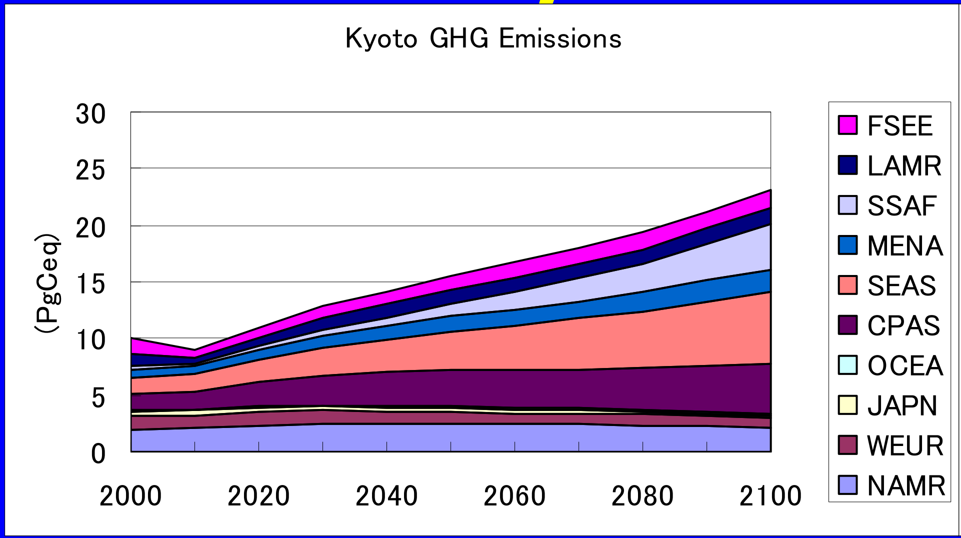
Energy
= (GHG Em. / fuel) * (fuel / GDP)
fuel choice enduse efficiency

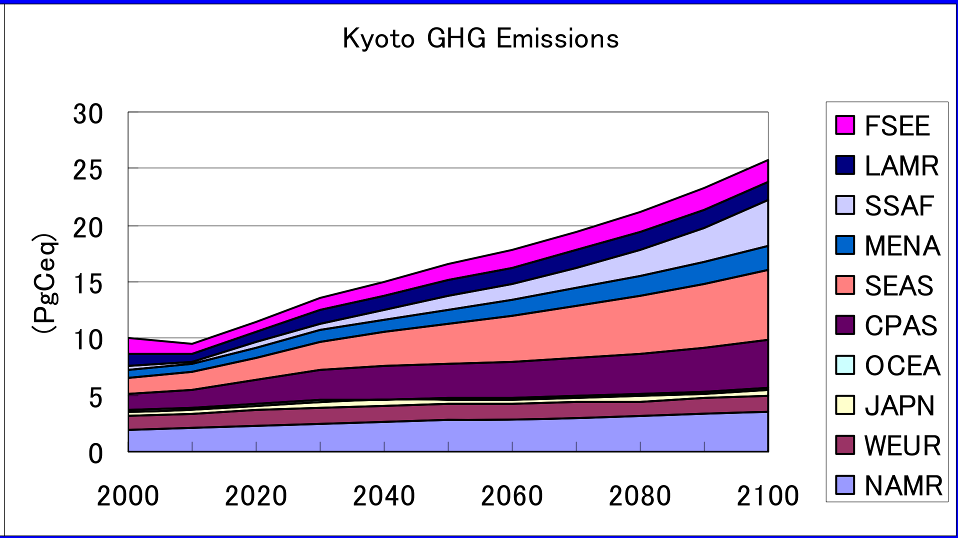
non-Energy
= (GHG Em. / Activity) * (Activity / GDP)
emission factor env. management

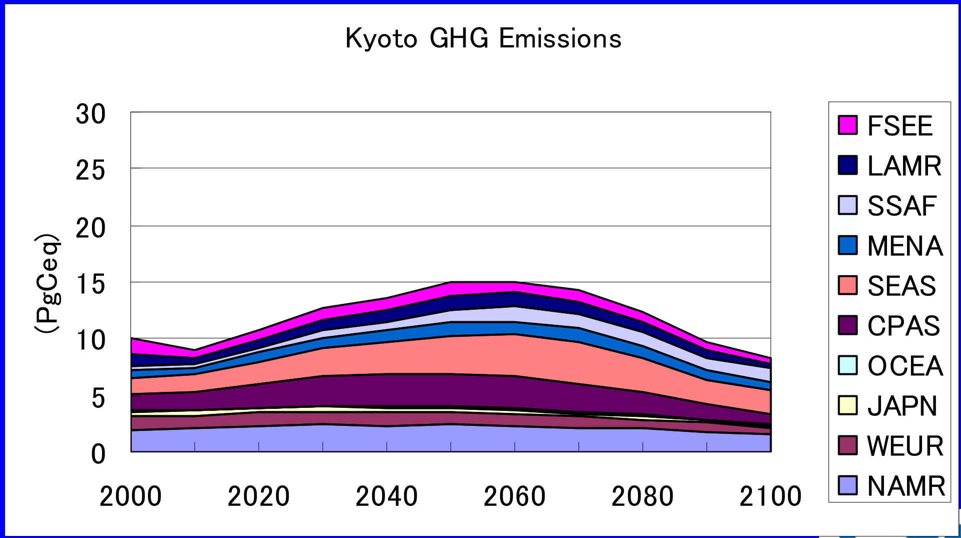
3. Scenarios

* REF
  Reference
* INT
  Intensity Targets
  - around half at end of 21st cent.
* INT+RF
  INT + Rad. Forcing Target
  (4.5W/m2)

4. Results
* Total Kyoto GHGs Emissions







INT

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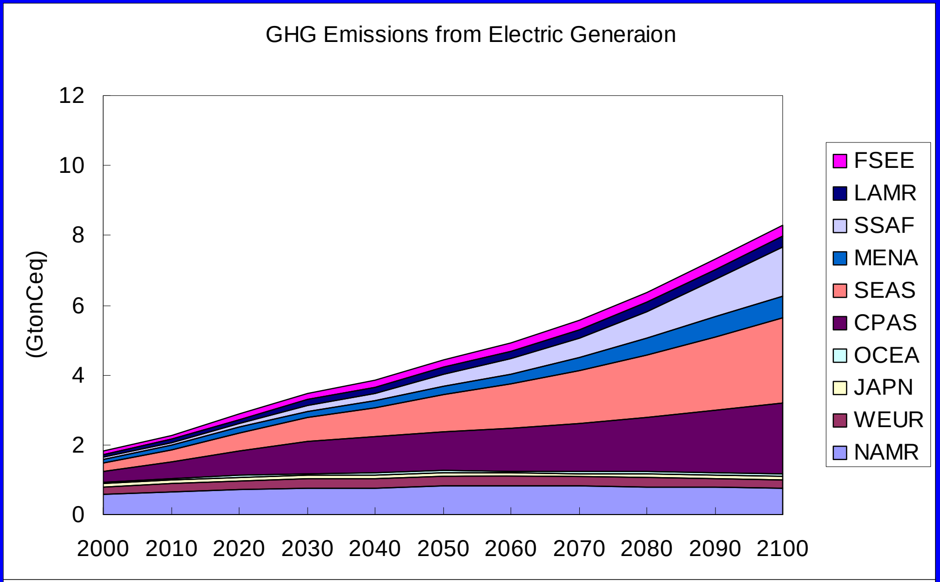
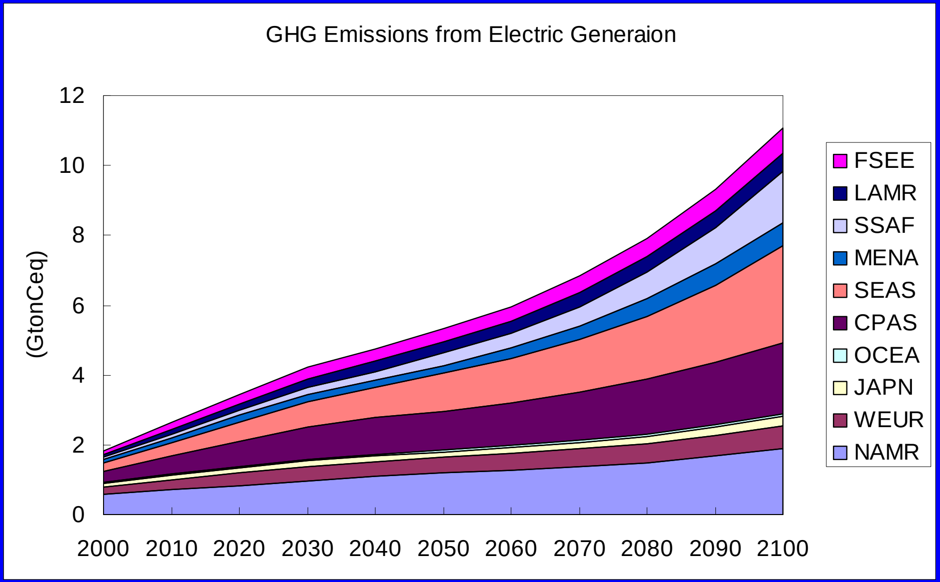
INT+RF

* Emissions from Power Generations





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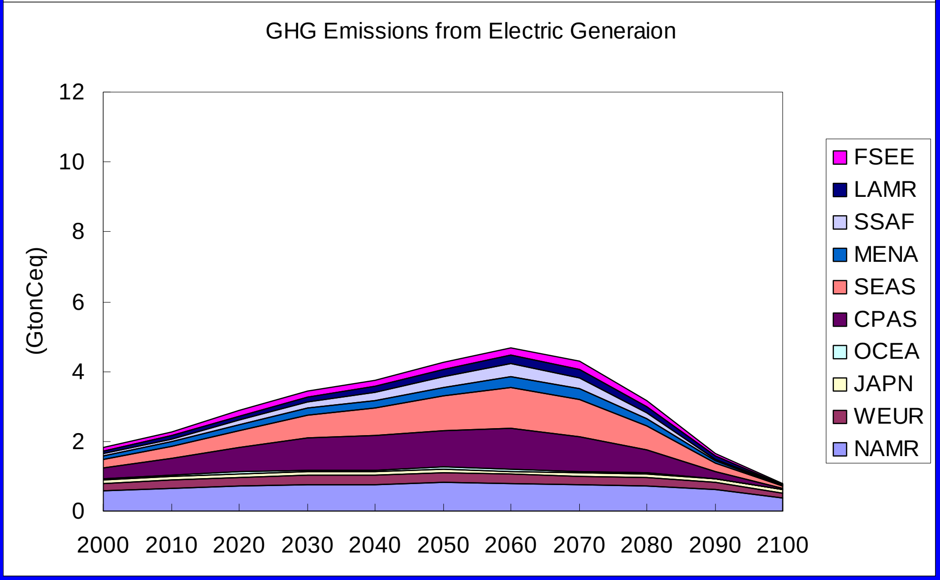

INT+RF

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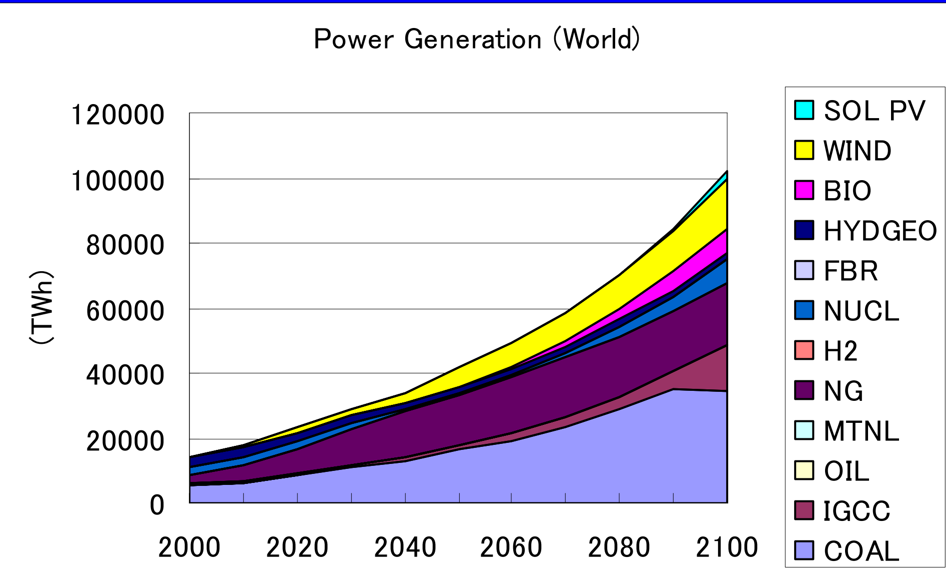
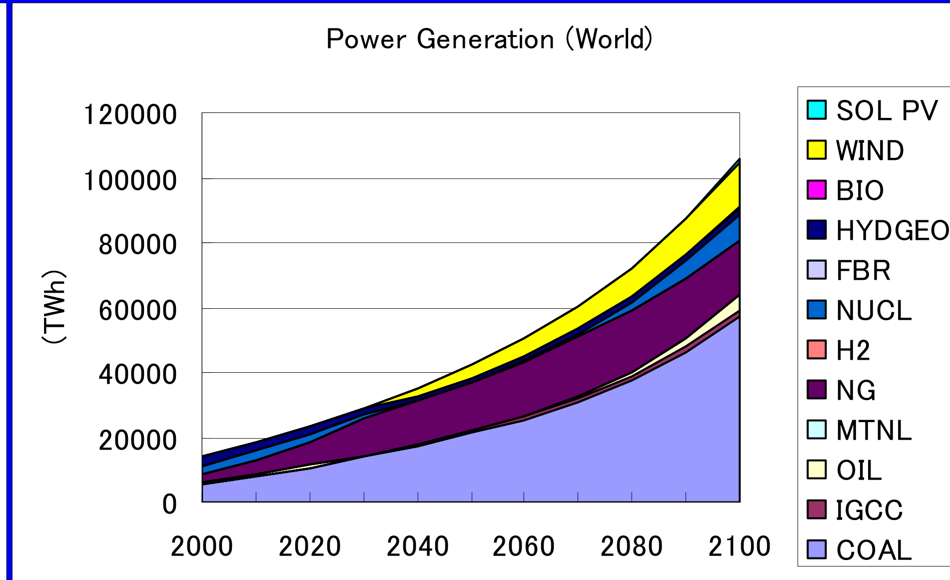
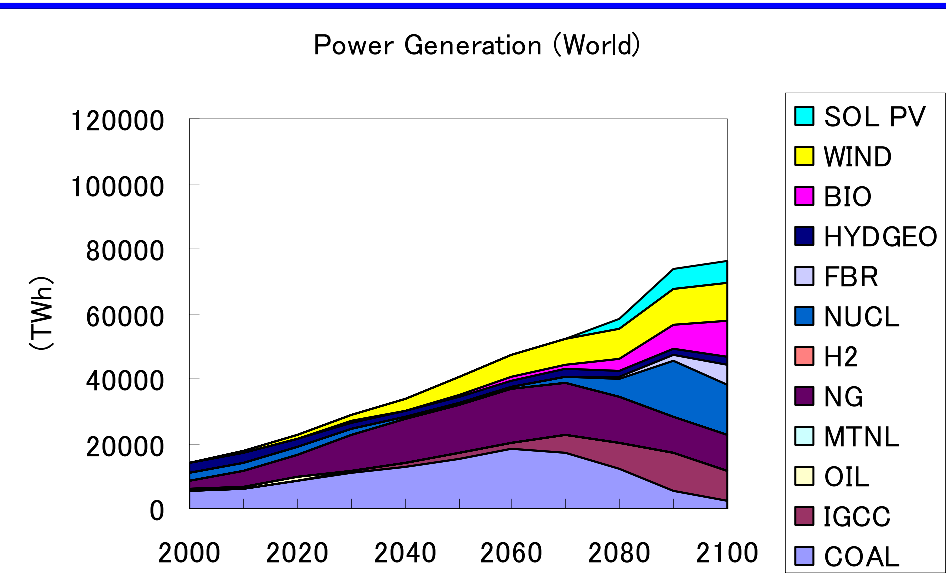
* Power Generations Profile







INT

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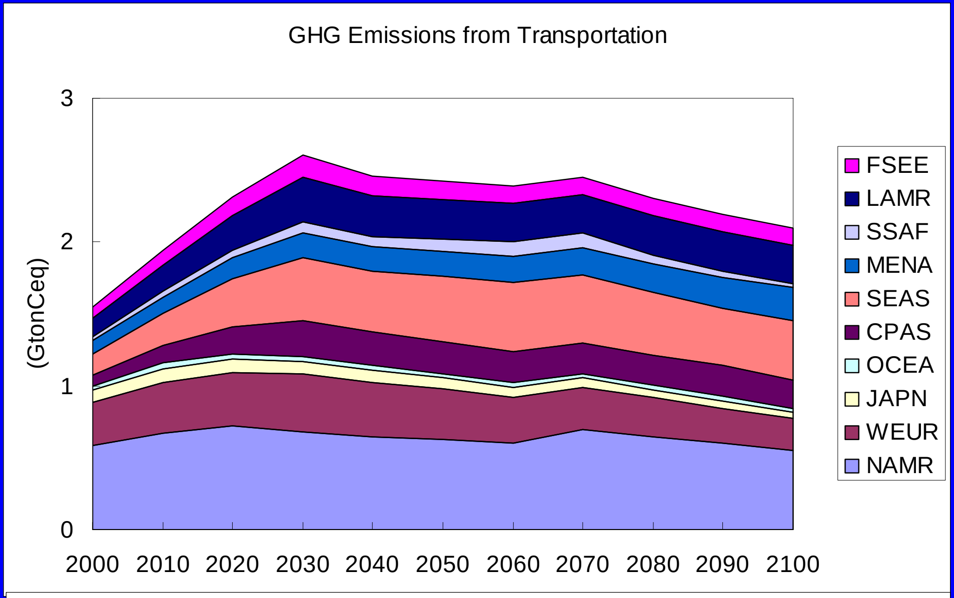
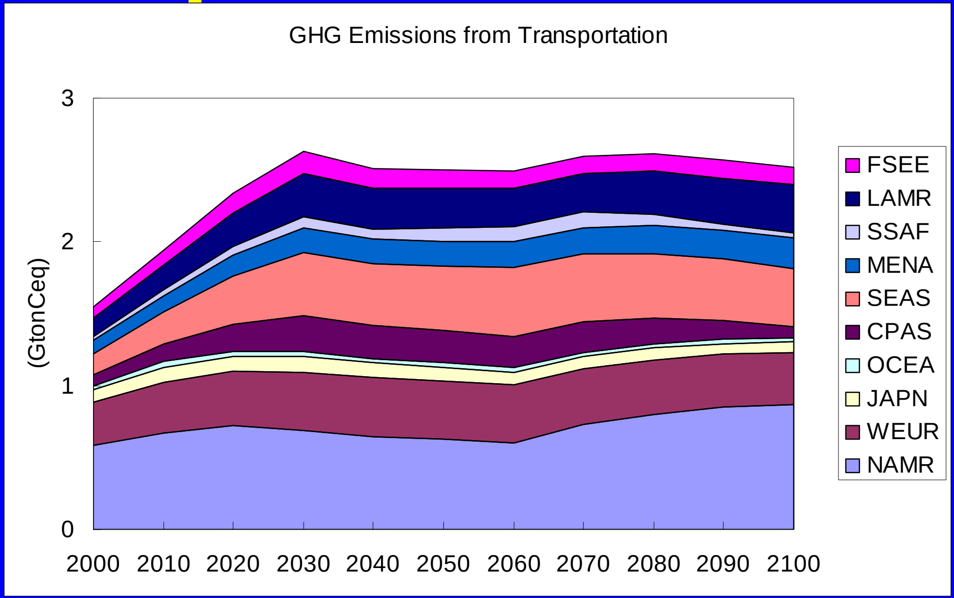
INT+RF

* Emissions from Transportations





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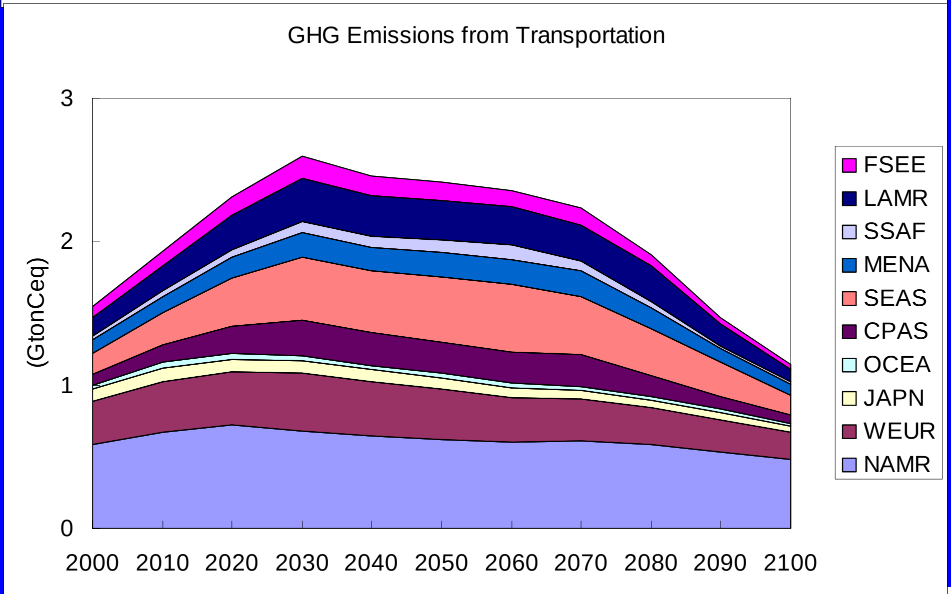
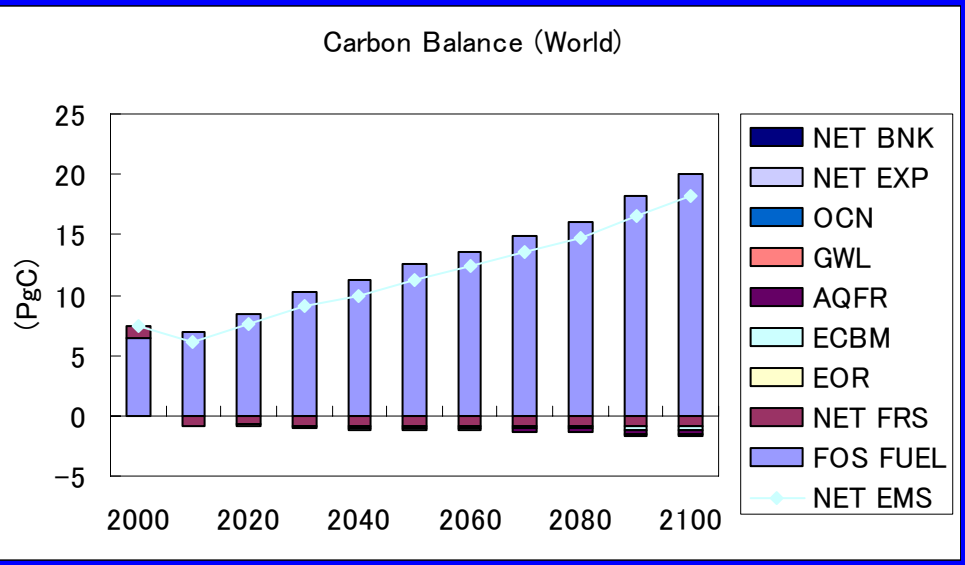
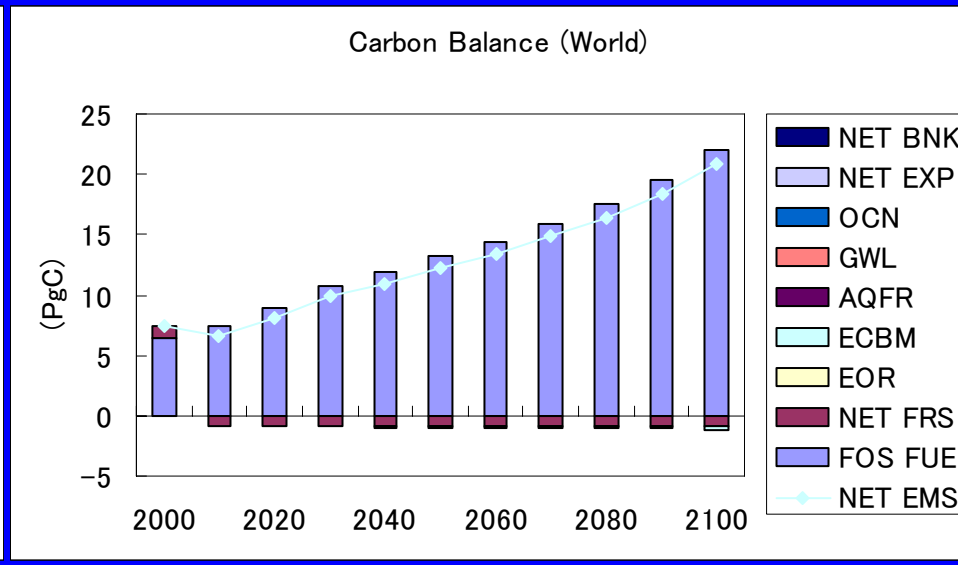
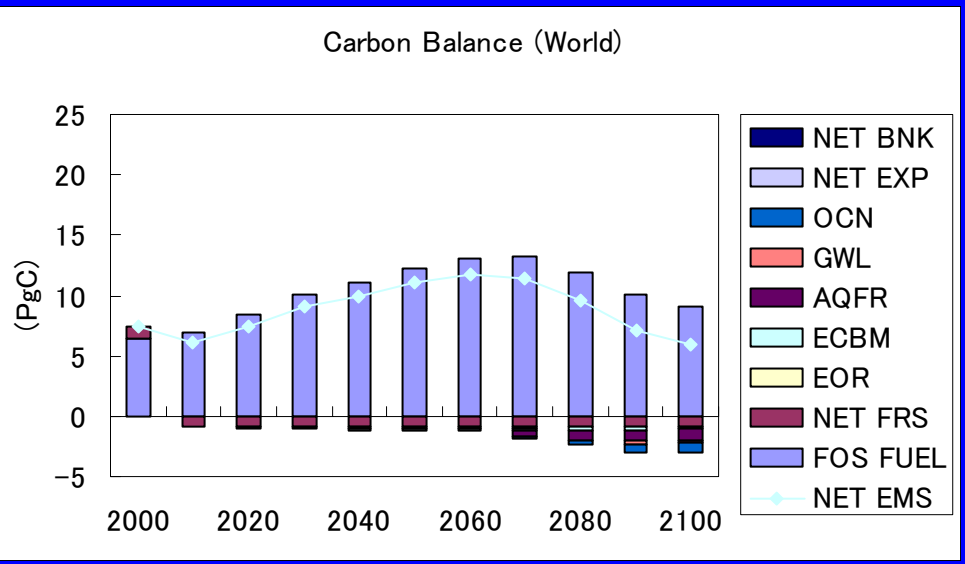


INT+RF

* CO2







INT

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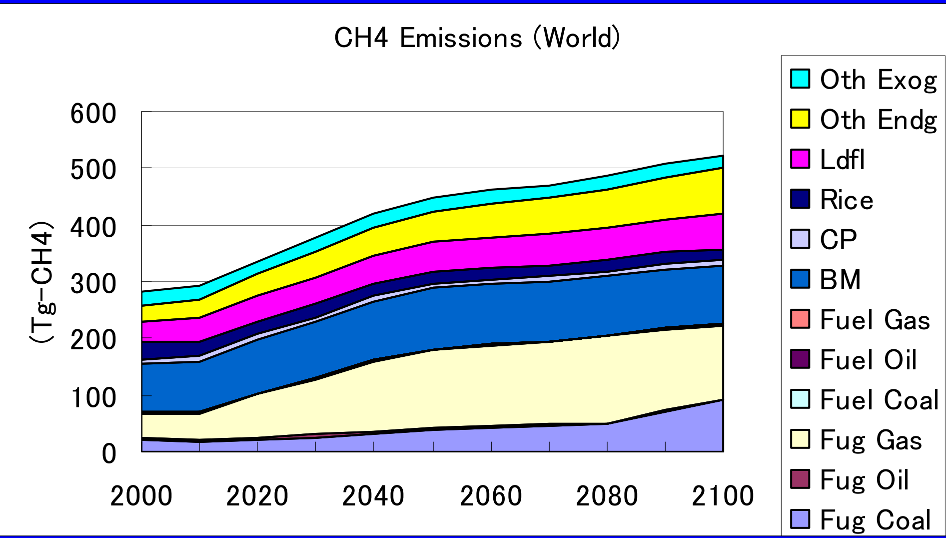
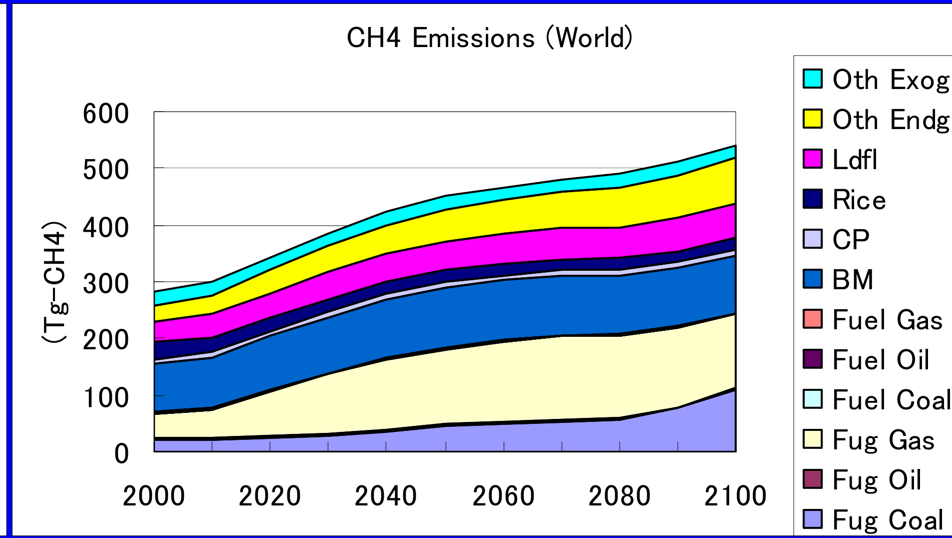
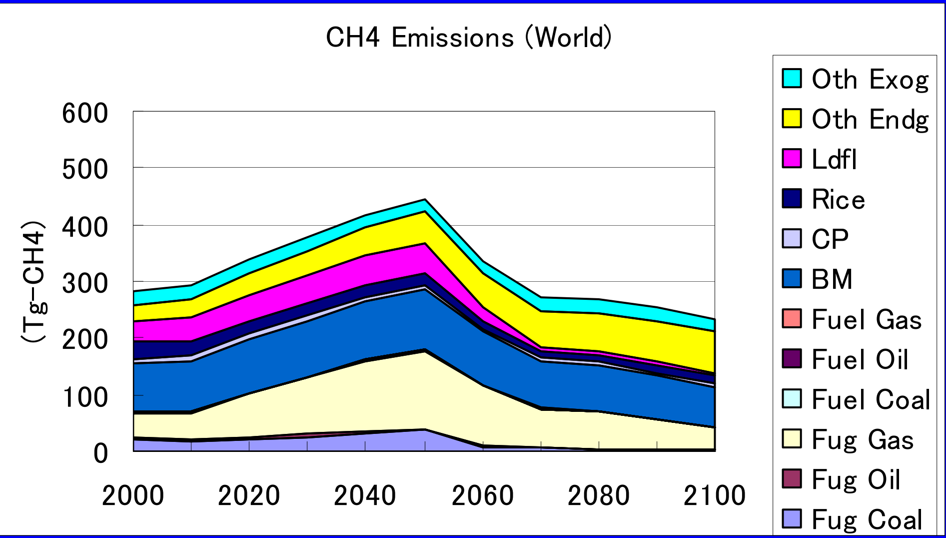
INT+RF

* CH4







INT

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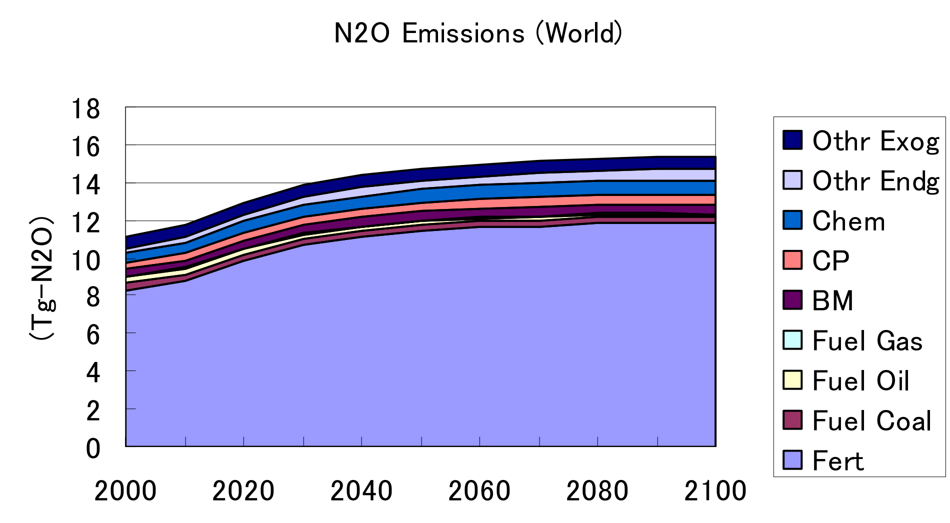
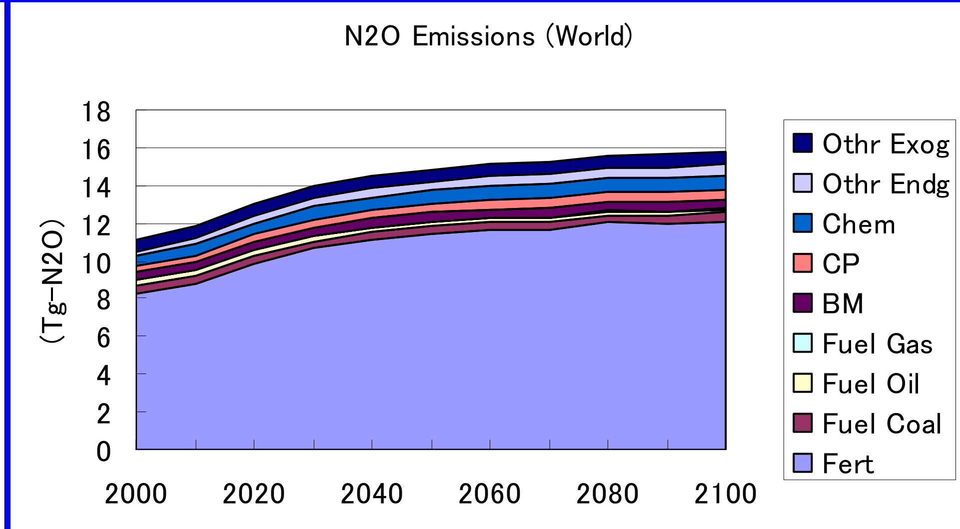
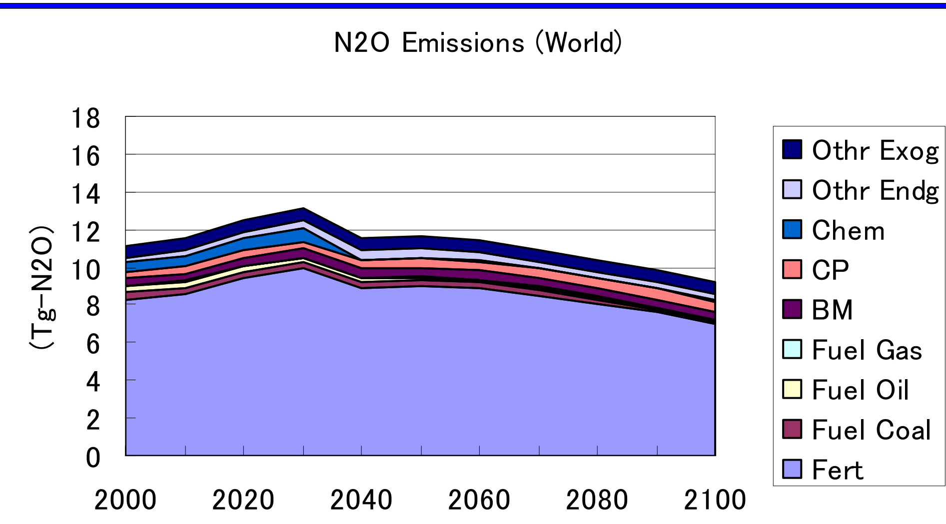
* N2O







INT

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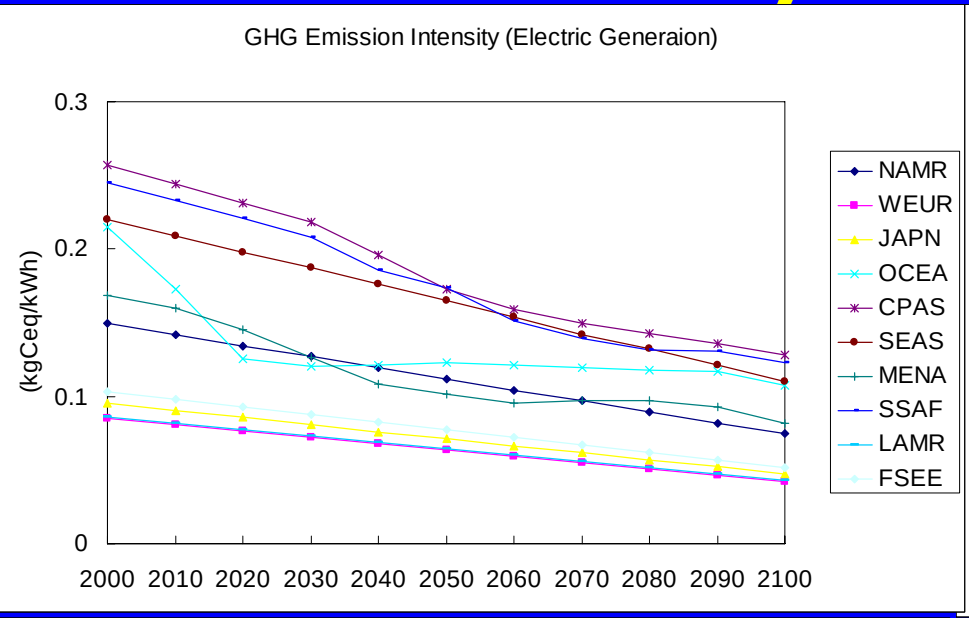
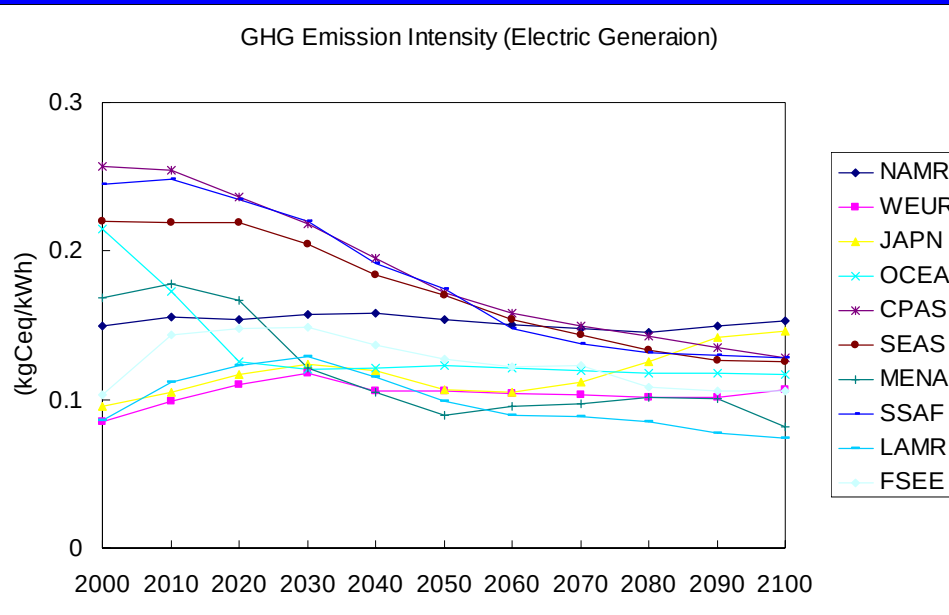
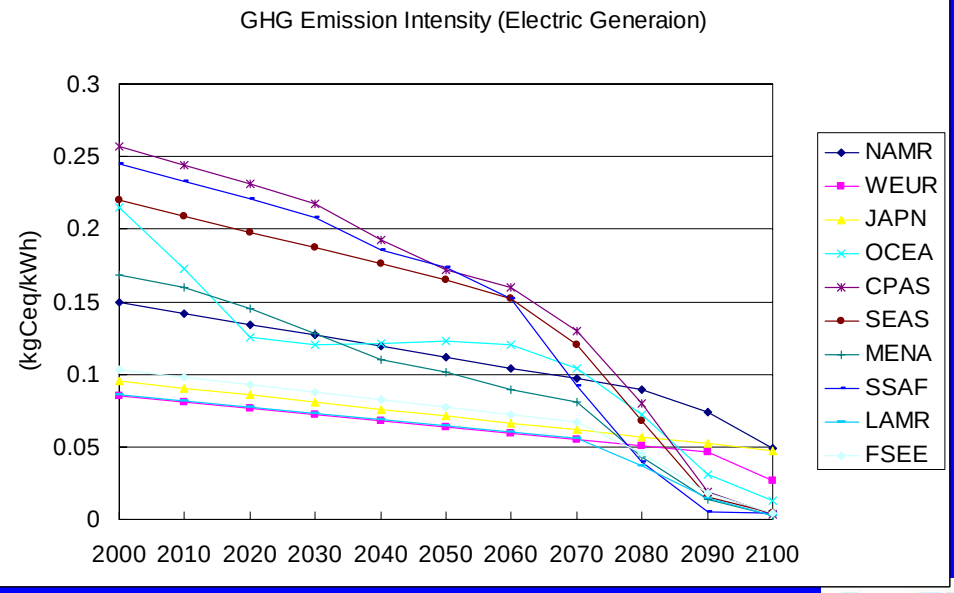
INT+RF

* GHG Intensity - Power Generations







INT

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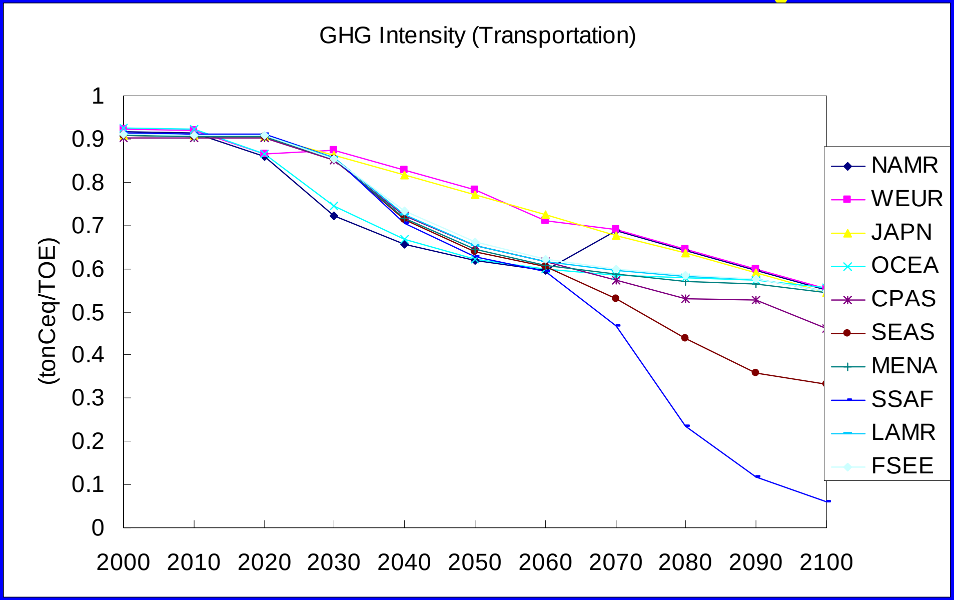
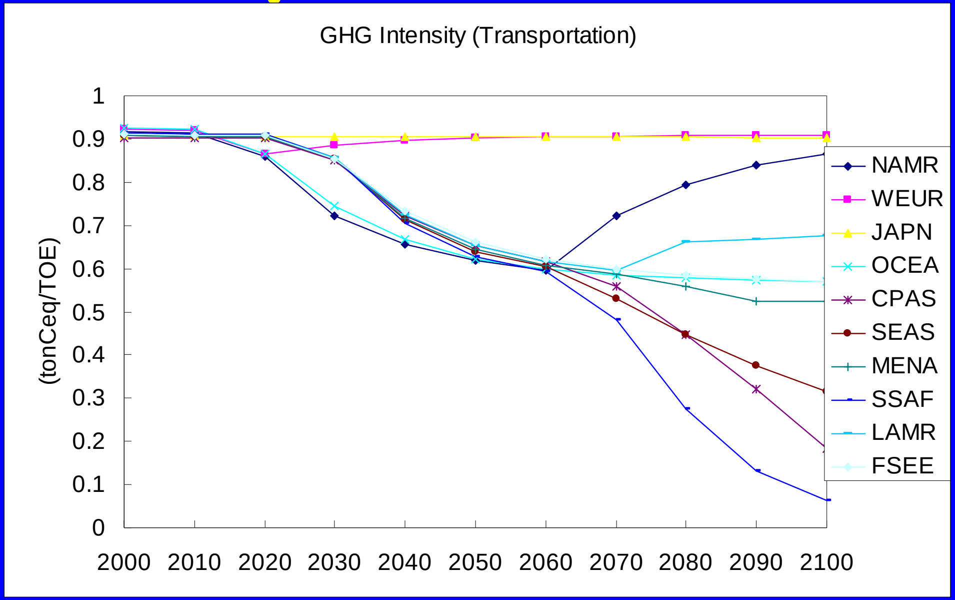
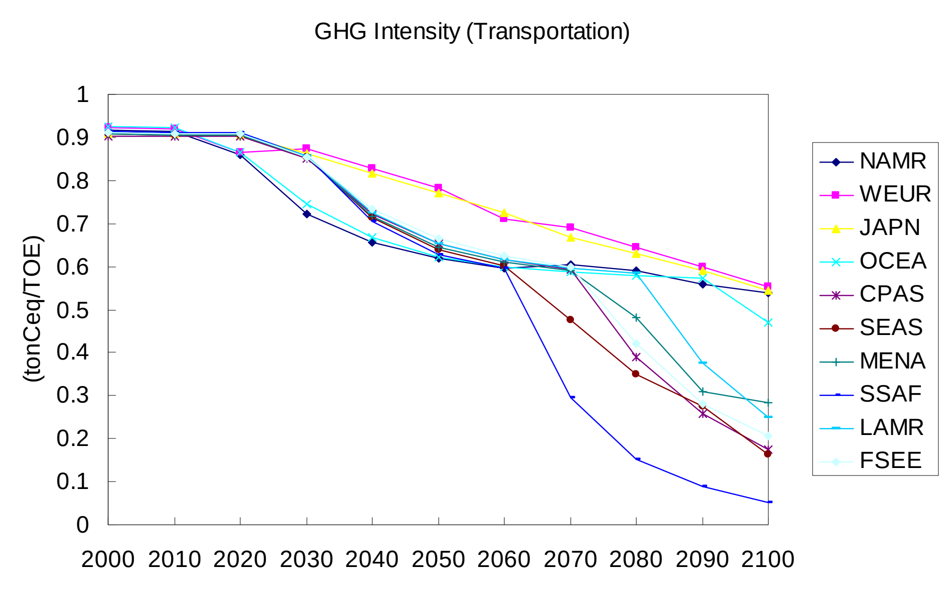
* GHG Intensity - Transportation







INT

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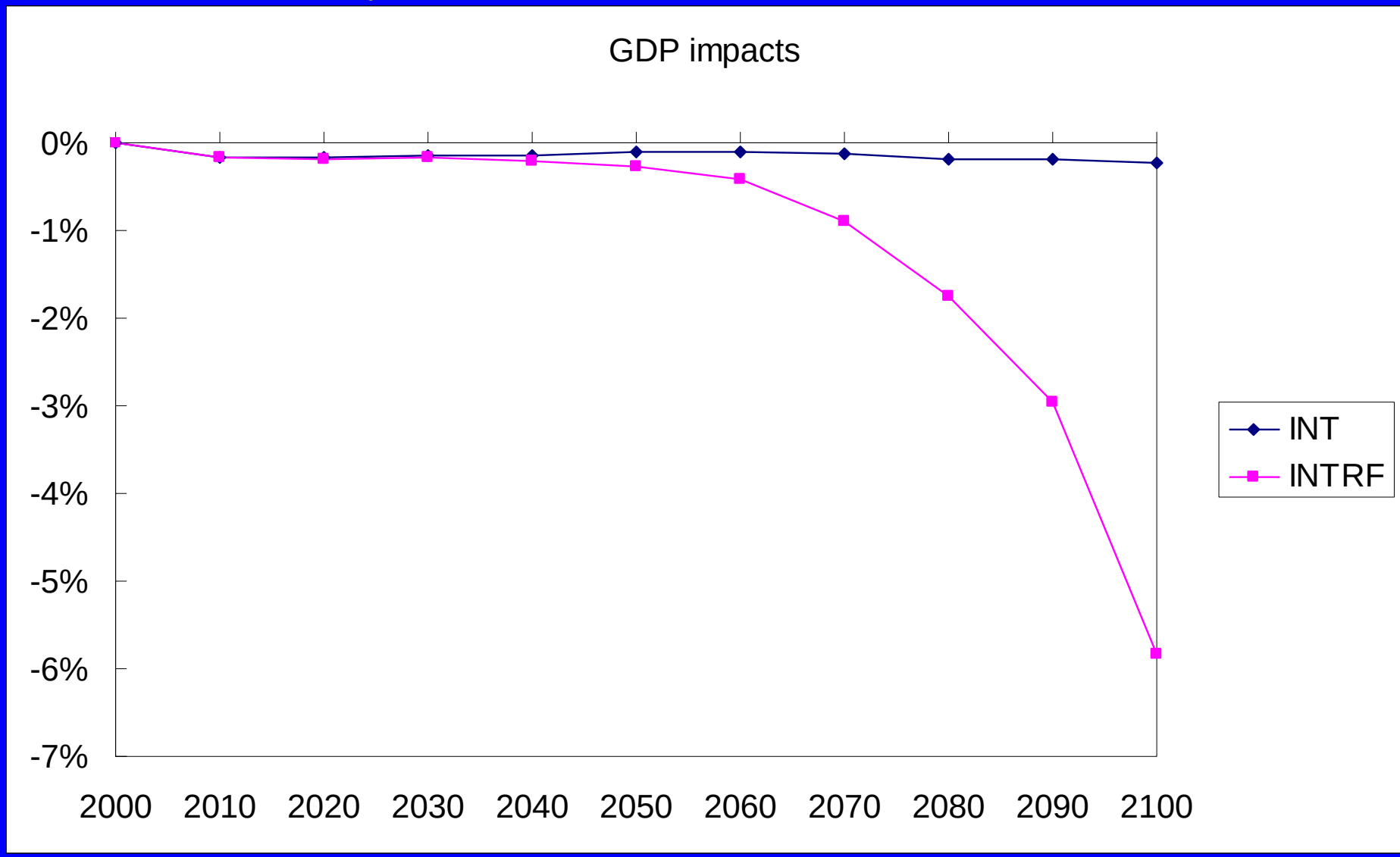
INT+RF

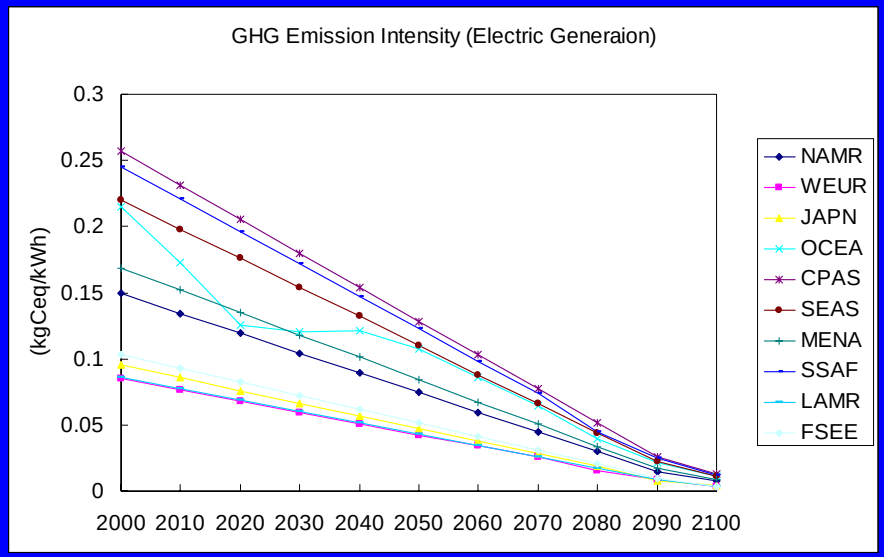
* GDP Impacts

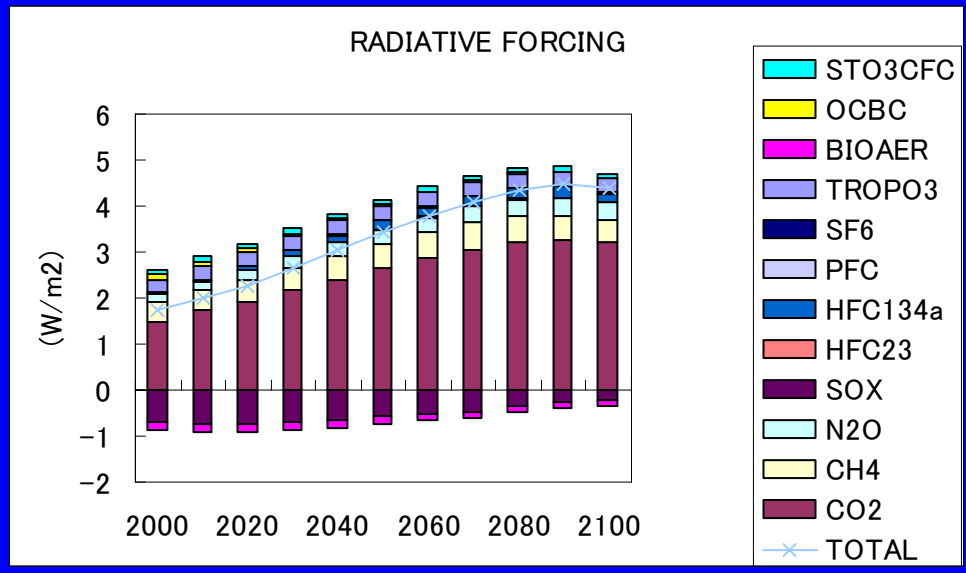

GDP impacts
0%
-1%
-2%
-3%
-4%
-5%
-6%
-7%
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
INT
INTRF

5. Summaries and Future Works

* Combination of intensity target and long-term climate target is important.
* If the initial intensity target rate is slow, acceleration of intensity target or climate target is needed in the long run.
* Definition of intensity is the key.
  Factor decomposition
  - Technology, Management, etc.
* Disaggregation of other sectors is required.

* Strong intensity target (i.e. almost zero emissions at the end of 21st cent.) provides forcing stabilization.





Thank you for the kind attention.