Overview of CO2 emissions in the Arab Region: National versus Sectoral Emissions

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1. Introduction

2. World Regions and CO2 Emissions

3. Arab MDG Report: Goal 7

4. Performance of Arab Countries
   - Total CO2 emissions
   - CO2 emissions growth
   - CO2 emissions from transport
   - Sectoral CO2 emissions

5. Arab Survey on INLAND TRANSPORT CO2 EMISSIONS

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Introduction

- Climate change has emerged as an important threat to economic development, environment, and public health.
- The transport sector contributes 13% of global GHG and 23% of energy-related carbon dioxide (CO2) emissions.
- Three-fourths of transportation-related emissions are from road traffic.
- Emissions from transportation are rising faster than from other energy-using sectors and are predicted to grow globally by 80% from 2007 and 2030.
- Empirical analysis suggests that national commitment is significantly affected by the national government’s incentives.
An assessment of total climate impact due to emissions from major sectors – Power and On-road transportation are estimated to exert the largest net positive radiative forcing effect on the climate.

Source: Unger et al., 2009
Share of transport CO2 emissions in world regions and countries

Share of transport CO2 emissions in the Middle East resemble the world share

Approximately double shares of biggest growing economies such as China, India and Russia

Source: IEA, 2011b
Middle East has shown a growth of over 100% in CO2 emissions (both total and transport)

Ranks 2\textsuperscript{nd} after China in growth during the period 1990-2009

Source: IEA, 2011b
### ARAB MDG 2013: Goal 7: CO2 Emissions

#### A. In millions of metric tons

<table>
<thead>
<tr>
<th>Category</th>
<th>1991</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arab region</td>
<td>748</td>
<td>1494</td>
<td>1541</td>
</tr>
<tr>
<td>LDCs</td>
<td>19</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>GCC</td>
<td>376</td>
<td>785</td>
<td>806</td>
</tr>
<tr>
<td>Maghreb</td>
<td>189</td>
<td>423</td>
<td>436</td>
</tr>
<tr>
<td>Mashreq</td>
<td>165</td>
<td>248</td>
<td>258</td>
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</table>

#### B. Per capita in metric tons

<table>
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<tr>
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<td>LDCs</td>
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<tr>
<td>GCC</td>
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<td>19.4</td>
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<tr>
<td>Maghreb</td>
<td>2.4</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Mashreq</td>
<td>2.0</td>
<td>3.0</td>
<td></td>
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</tbody>
</table>

#### C. Per US$1 GDP, PPP, in kilogrammes

<table>
<thead>
<tr>
<th>Category</th>
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<th>2009</th>
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<td>Arab region</td>
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<tr>
<td>LDCs</td>
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<td>GCC</td>
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</tr>
<tr>
<td>Maghreb</td>
<td>0.4</td>
<td>0.5</td>
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</tr>
<tr>
<td>Mashreq</td>
<td>0.4</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

**CO2 emissions per 1$ GDP went down by 33% in the Arab Region**

**Emissions doubled in the Arab Region 100% in 1991-2008 3% in 2008-2009**

**GCC CO2 emissions / capita are higher than developed regions**


Note: 2009* indicates that data are for 2009 or earlier for some countries.
Saudi Arabia
Egypt
UAE
with the
highest CO2
Emissions in
the region
CO2 Emissions (KT) 2000 - 2010

Growth

- Growth in CO2 emissions in all Arab countries
  - West Bank and Gaza: 199%
  - Yemen, Rep.: 49%
  - United Arab Emirates: 49%
  - Tunisia: 30%
  - Syrian Arab Republic: 21%
  - Sudan: 156%
  - Saudi Arabia: 56%
  - Qatar: 103%
  - Oman: 161%
  - Morocco: 49%
  - Kuwait: 70%
  - Lebanon: 33%
  - Libya: 25%
  - Jordan: 34%
  - Iraq: 58%
  - Egypt, Arab Rep.: 45%
  - Bahrain: 30%
  - Algeria: 40%

- Palestine with the highest growth in CO2 emissions
  - Oman: 156%
  - Sudan: 103%
  - Qatar: 161%
CO2 emissions (metric tons per capita) 2000-2010

- CO2 emissions per capita are high in GCC countries, lead by Qatar and Kuwait.
CO2 emissions (metric tons per capita) 2000-2010

Growth

- CO2 emissions/capita growth doubled in Oman, Palestine and Sudan
CO2 emissions (kg per 2005 US$ of GDP)

- CO2 emissions /$ of GDP has grown over 50% in the past decade in Oman and Iraq
CO2 emissions from transport (million metric tons)

- CO2 emissions from transport are exceptionally high in Saudi Arabia compared to other countries in the world (even after 2010)
CO2 emissions from transport (million metric tons) Growth

- Arab countries have increased their CO2 emissions from transport esp. compared to EU and developed nations
- 285% growth in CO2 emissions from transport in Qatar
- Other Arab countries with high growth are Algeria, Bahrain, Oman and Sudan
Adjusted savings: carbon dioxide damage (current 1000 US$)

-Carbon Dioxide damage almost doubled in Arab countries following the growth of emissions and affecting negatively country savings
Co2 Emissions per Sector (% of total fuel combustion)

MAGHREB 2010

**MOROCCO**
- Transport: 36%
- Manufacturing industries and construction: 23%
- Residential buildings and commercial and public services: 17%
- Other sectors: 9%
- Electricity and heat production: 15%

**TUNISIA**
- Transport: 34%
- Manufacturing industries and construction: 27%
- Residential buildings and commercial and public services: 24%
- Other sectors: 10%
- Electricity and heat production: 5%

**ALGERIA**
- Transport: 37%
- Manufacturing industries and construction: 34%
- Residential buildings and commercial and public services: 13%
- Other sectors: 13%
- Electricity and heat production: 3%

**LIBYA**
- Transport: 60%
- Manufacturing industries and construction: 24%
- Residential buildings and commercial and public services: 12%
- Other sectors: 4%
- Electricity and heat production: 0%
Co2 Emissions per Sector (% of total fuel combustion) GCC 2010

GCC 2010

UAE
- Transport: 17%
- Electricity and heat production: 39%
- Manufacturing industries and construction: 44%

QATAR
- Transport: 14%
- Electricity and heat production: 53%
- Manufacturing industries and construction: 33%

SAUDI ARABIA
- Transport: 24%
- Electricity and heat production: 56%
- Manufacturing industries and construction: 19%

KUWAIT
- Transport: 13%
- Electricity and heat production: 69%
- Residential buildings and commercial and public services: 1%
A. To reduce inland transport CO2 emissions in your country or region

- Do you have a strategy or a target? 71%
- If yes, is this strategy or target consistent with your country's international obligations? 57%
- Have you implemented legal instrument(s)? 57%
- Have you had effective or positive results? 43%
- Do you have policy measures in preparation? 57%
B. Regarding statistical data collection on inland transport CO2 emissions

Do you use national or regional procedure/approach to collect the data? 57%
Could such statistical data be made available for the United Nations? 57%
C. For the assessment of local/national/regional inland transport CO2 emissions

- Do you use specific mathematical models/tools for the different transport modes? 29%
- Would it be possible to use your models/tools for the purpose of the United Nations Development Account project? 43%
- Could your models/tools assess greenhouse gases other than CO2? 43%
have you performed studies on the possibility to reduce CO2 emissions?

have you developed any best practice to implement such measures (e.g. with a simulation model/various policies)?

have you implemented such policy measures on a local/national/regional level?

have you evaluated the effectiveness of these measures?

Are you planning further measures on a local/national/regional level?
Conclusions
Conclusions

1. Middle East has shown a growth of over 100% in CO2 emissions (both total and transport)
2. CO2 emissions in the Arab region have doubled since the 1990s lead by GCC and Mashreq countries
3. Saudi Arabia leads in CO2 emissions in KT. However, fastest growth in CO2 emissions and per capita are Palestine, Oman and Sudan
4. Oman and Iraq have the highest CO2 emissions (kg per 2005 US$ of GDP)
5. Saudi Arabia has the largest CO2 emissions from transport (million metric tons). However, Qatar currently has fastest growth rate
Conclusions

5. The composition of Co2 Emissions per Sector (% of total fuel combustion) shows a very specific block (Mashreq, GCC, Maghreb)

6. QUESTIONNAIRE ON INLAND TRANSPORT CO2 EMISSIONS
   • 7 out of 14 respondents answered
   • 71% have a strategy
   • 57% implemented legal instruments
   • 43% have had positive results
   • 57% have statistical data
   • 29% use specific models/tools for assessment
   • 29% implemented policy measures on a local scale
   • 0% evaluated the effectiveness of the policy measures
Thank you!

“Be the change you want to see in the world.” – Mahatma Gandhi