Policy Challenges for the Next 50 Years

Giuseppe Nicoletti
Head of Structural Policy Analysis Division, Economics Department
Policy Challenges for the Next 50 Years

The OECD will be 100-years old in 2060

What are the policy challenges for the next 50 years?

The OECD 50-Year Global Scenario helps to highlight key global challenges and how they are connected
OECD 50-Year Global Scenario framework

- Long-term macro module
  - Aggregate growth model

  - Emission, climate, and environmental damage module(s)
  - Aggregate growth + CGE model

  - Trade and specialisation module
  - Aggregate growth + CGE model

  - Wage inequality module
  - Aggregate model

Exogenous policy assumptions

- Migration module
- Tertiary education module
Global economic growth will slow

GDP growth

% average annual rate

Emerging economies

World

Advanced economies

Contribution of OECD to global activity and growth will decline

Contributions to global growth

Shares in global GDP (current PPPs)
Incomes of EMEs will increase, but will not have converged by 2060

GDP per capita as a share of advanced economies’ average level
The global economy will become more interdependent …

Exports as a share of global GDP
...and multipolar as activity and trade shift to EMEs, and especially to Asia

Size and share global trade

2012

- Emerging-Emerging: 15%
- Advanced-Emerging: 38%
- Advanced-Advanced: 47%

2060

- Emerging-Emerging: 33%
- Advanced-Emerging: 42%
- Advanced-Advanced: 25%
Emerging economies will move into higher value-add activities

Value-added shares by sector

Changes in industry structure...
There will be major shifts in specialisation

Shares of global exports by sector

- **Manufacturing**
  - 2010: 37% Rest of world, 63% OECD
  - 2060: 58% Rest of world, 42% OECD

- **Services**
  - 2010: 32% Rest of world, 36% OECD
  - 2060: 61% Rest of world, 39% OECD

- **Agriculture**
  - 2010: 46% Rest of world, 54% OECD
  - 2060: 42% Rest of world, 57% OECD

- **Energy**
  - 2010: 77% Rest of world, 23% OECD
  - 2060: 61% Rest of world, 37% OECD

...reflecting changes in trade specialisation
4 policy challenges

- Sustaining growth
- Tackling rising inequality
- Protecting the environment
- All this in the context of strong fiscal pressures
• We know something about the effects of growth on inequality and the environment
• We know a little about the effects of inequality and environment on growth
• We know very little on the effects of the environment on inequality

Growth can increase inequality and worsen the environment
- but it doesn’t have to...
1. The Growth Challenge

The double demographic shock: ageing and perhaps lower immigration will reduce the scope to grow through an increasing labour force.

Productivity will drive growth in dynamic, knowledge-based high value-added economies.
Ageing makes it harder to sustain growth

Population aged 15-74 as a share of the total
Using migration to offset the effects of ageing will become harder

Labour force, 2060

- Baseline
- Scenario with less immigration

* Scenario where migration falls due to narrowing income differentials
Productivity and innovation more than jobs will be the key driver of growth

Contribution to growth and convergence in GDP per capita, 42 countries, 2000-2060

Innovation, technology spillovers and diffusion will increasingly drive growth

Increasing complementary skills of the population will be key

Allocating resources to high productivity firms and matching skills to jobs (using talents) will also be crucial
Over past decades growth has not benefitted all in the same way.

Income inequality has often increased sharply.

and redistributive policies have become less effective in some countries.
Income gaps are partly driven by skilled-biased growth

The demand for the high-skilled has risen everywhere

Note: Low-skill refers to completed primary and/or lower-secondary education (ISCED 1 and 2); medium-skill refers to completed upper-secondary and/or non-tertiary education (ISCED 3 and 4); and high-skill refers to completed tertiary education (ISCED 5 and 6).
Changing economic patterns are globally generating jobs for the medium-high skilled.

Change in jobs by skills, 1995-2008 (‘000)

OECD

EMEs
Earnings gaps will continue to widen in advanced countries

Ratio of gross wages of the top 90th to the bottom 10th percentile

This is just factoring in continuing skill biased technological change and skill supply stickiness (Tinbergen model)...

...but other exacerbating factors could also be at play (rising cross-firm wage gaps, r>g, lower returns to housing)

Sizes of the redistribution, education and matching challenges are set to increase dramatically
Rising skill demand and skill premia will raise demand for education

Growth in demand for tertiary education between 2010 and 2060

In percent

- Central scenario
- Alternative scenario

Exogenous demand
Endogenous demand
Growth will reduce income differences between countries and reduce poverty. But, by 2060, average inequality in the OECD area would be close to current US levels.

More investment in education, skills and life-long learning is needed

Better use of talent pool via equal opportunity and matching

There will be more demand for progressive/redistributive policies, to balance against sustaining growth
3. The Environment Challenge: GHG emissions

Million tonnes, $\text{CO}_2$ equivalent

- **2010**
  - 45 000 million tonnes

- **2060**
  - 95 000 million tonnes

GDP will increase to four times its current level

The resource pressures will be huge, even if intensity falls
Climate change will begin hitting GDP sooner than expected

Climate change will lower GDP, especially in Africa and parts of Asia, slowing down catch up

Losses are estimated to be accelerating over time and reach 2% globally by 2060

- Losses in Africa and South and South-East Asia will be double the global losses
- Losses in Latin America, Russia and China will be close to global losses
- Losses in North America, the Pacific region and Europe will be minor
Environmental policies have become more stringent
4. The fiscal constraint
Public budgets will be hard-pressed for facing future policy challenges

Budget adjustment needed as of 2014 to stabilise debt ratios at 60% of GDP by 2060

- Tertiary education expenditures
- Health expenditures (cost containment scenario)
- Pension expenditures
- Fiscal gap assuming constant pension, health and education expenditures
- Total fiscal pressures

* Tertiary education spending projections not available.
Summing up on policy requirements

- Face ageing
- Encourage innovation and knowledge-driven growth
- Meet the inequality challenge
- Adapt to and limit climate changes and its damages
- All this with public resources that are under increasing stress
A new approach is needed

Policies need to look ahead and prepare for a shifting world

The case for structural reform is stronger and more urgent with new challenges

All dimensions of well-being will be more connected

Given the headwinds, the challenges for growth-enhancing, redistributive and environmental policies will be huge
The “globalisation paradox”

The global economy will be more integrated so closer cooperation is needed

- Further global trade integration
- More cooperation in global public goods (innovation, competition policy, environment)
- Corporate income taxation (factors and tax bases more mobile)

The world will be multipolar so cooperation could be harder to achieve
Further reading

OECD 50-year Global Scenario website

OECD Economic Policy Notes series
OECD Economic Policy Paper series
OECD Economics Department working paper series
Further background slides
Global trade 1984-2011

Growth of exports and GDP

- World
- OECD
- India
- China
- World GDP growth

%
Trade elasticity to GDP
1986-2060

- Global GDP growth
- Global trade growth predicted by linear relation
- Observed global trade growth

Projections

- Apparent elasticity: 2.1 (1986-07)
- Apparent elasticity: 1.4 (2008-14)
- Apparent elasticity: 2 (2015-20)
- Apparent elasticity: 1.9 (2021-30)
- Apparent elasticity: 1 (2051-60)
Further trade liberalisation would help reach higher GDP levels

Increase in GDP relative to baseline, 2060
If human capital investment was slower than expected in Asia, trade would suffer.
If human capital investment was slower than expected in Asia, specialisation in high VA activities would suffer.

Exports compared to baseline scenario (% difference in 2060)
Measures included in the OECD Environmental Policy Stringency (EPS) indicator

### Table 3. Instruments included in the energy sector indicator

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Information considered for scoring</th>
<th>Rules for addressing capital vintage or technological composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission Trading Scheme (CO₂)</td>
<td>Price of one CO₂ allowance</td>
<td>n.a.</td>
</tr>
<tr>
<td>Renewable Energy Certificates Trading Scheme</td>
<td>% of renewable electricity that has to be procured annually</td>
<td>n.a.</td>
</tr>
<tr>
<td>Energy Certificate Emission trading Scheme</td>
<td>% of electricity saving that has to be delivered annually</td>
<td>n.a.</td>
</tr>
<tr>
<td>Emission trading Scheme for SO₂</td>
<td>Price of one SO₂ allowance</td>
<td>n.a.</td>
</tr>
<tr>
<td>CO₂ tax</td>
<td>Tax rate in EUR/tonne</td>
<td>n.a.</td>
</tr>
<tr>
<td>NOₓ Tax</td>
<td>Tax rate in EUR/tonne</td>
<td>n.a.</td>
</tr>
<tr>
<td>SO₂ Tax</td>
<td>Tax rate in EUR/tonne</td>
<td>n.a.</td>
</tr>
<tr>
<td>Feed In Tariff for wind</td>
<td>EUR/kWh</td>
<td>n.a.</td>
</tr>
<tr>
<td>Feed In Premium for wind</td>
<td>EUR/kWh</td>
<td>n.a.</td>
</tr>
<tr>
<td>Feed In Tariff for solar</td>
<td>EUR/kWh</td>
<td>n.a.</td>
</tr>
<tr>
<td>Feed In Premium for solar</td>
<td>EUR/kWh</td>
<td>n.a.</td>
</tr>
<tr>
<td>Particulate Matter Emission Limit Value for newly built coal-fired plant</td>
<td>Value of Emission Limit in mg/m³</td>
<td>ELV for newly built large scale coal-fired plants</td>
</tr>
<tr>
<td>SO₂ Emission Limit Value for newly built coal-fired plant</td>
<td>Value of Emission Limit in mg/m³</td>
<td>ELV for newly built large scale coal-fired plants</td>
</tr>
<tr>
<td>NOₓ Emission Limit Value for newly built coal-fired plant</td>
<td>Value of Emission Limit in mg/m³</td>
<td>ELV for newly built large scale coal-fired plants</td>
</tr>
<tr>
<td>Government R&amp;D expenditures for renewable energy technologies</td>
<td>Expressed as % of GDP</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

### Table 4. Additional policy instruments included in the economy-wide indicator

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Information considered for scoring</th>
<th>Rules for addressing capital vintage or technological composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax on diesel for industry</td>
<td>Total tax for a litre of diesel used in transport for industry</td>
<td>n.a.</td>
</tr>
<tr>
<td>Deposit &amp; refund scheme</td>
<td>Dummy for presence of a Deposit Refund Scheme</td>
<td>n.a.</td>
</tr>
<tr>
<td>Maximum content of sulphur allowed in diesel</td>
<td>Value dictated by the standard</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
The structure of the EPS

Figure 4. Structure of the extended (economy-wide) indicator

- Composite indicator of environmental policy stringency
  - Market-based policies
    - Taxes: CO₂, NOₓ, SOₓ, Diesel
    - Trading Schemes: CO₂, Renewable Energy Certificates, Energy Efficiency Certificates
    - FITs: Solar, Wind
    - DRS: Deposit & Refund Scheme
  - Non-market policies
    - Standards: Emission Limit Values: NOₓ, SOₓ, PMₓ
    - R&D Subsidies: Government R&D expenditure on Renewable Energy
Environmental policy stringency has gone up…

Figure 11. Average environmental policy stringency over time
Fixed subsample of OECD countries

Stringency of environmental policies


Energy sector EPS indicator  Economy-wide EPS indicator
... largely driven by non-market measures
Economic impacts of climate change

Table 1. Overview of key climate impacts

<table>
<thead>
<tr>
<th>Category</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRICULTURE</td>
<td>Changes in crop yields (incl. cropland productivity and water stress)</td>
</tr>
<tr>
<td></td>
<td>Livestock mortality and morbidity from heat and cold exposure</td>
</tr>
<tr>
<td></td>
<td>Changes in pasture- and rangeland productivity</td>
</tr>
<tr>
<td></td>
<td>Changes in aquaculture productivity</td>
</tr>
<tr>
<td>COASTAL ZONES</td>
<td>Loss of land and capital from sea level rise</td>
</tr>
<tr>
<td></td>
<td>Non-market impacts in coastal zones</td>
</tr>
<tr>
<td>ECOSYSTEMS</td>
<td>Loss of ecosystems and biodiversity</td>
</tr>
<tr>
<td></td>
<td>Changes in forest plantation yields</td>
</tr>
<tr>
<td></td>
<td>Changes in fisheries catches</td>
</tr>
<tr>
<td>EXTREME EVENTS</td>
<td>Mortality, land and capital damages from hurricanes</td>
</tr>
<tr>
<td></td>
<td>Mortality, land and capital damages from floods</td>
</tr>
<tr>
<td>HEALTH</td>
<td>Mortality and morbidity from heat and cold exposure</td>
</tr>
<tr>
<td></td>
<td>Mortality and morbidity from infectious diseases, cardiovascular and respiratory diseases</td>
</tr>
<tr>
<td>LIVELIHOOD</td>
<td>Changes in energy demand for cooling and heating</td>
</tr>
<tr>
<td></td>
<td>Changes in tourism flows and services</td>
</tr>
<tr>
<td></td>
<td>Migration</td>
</tr>
<tr>
<td></td>
<td>Armed conflict</td>
</tr>
<tr>
<td>WATER STRESS</td>
<td>Changes in energy supply</td>
</tr>
<tr>
<td></td>
<td>Changes in irrigation water availability</td>
</tr>
<tr>
<td></td>
<td>Changes in availability of drinking water to end users (incl. households)</td>
</tr>
<tr>
<td>TIPPING POINTS</td>
<td>Large scale disruptive events</td>
</tr>
</tbody>
</table>

Source: Authors’ elaboration.