“Better Policies” Series

JAPAN

ADVANCING THE THIRD ARROW FOR A RESILIENT ECONOMY AND INCLUSIVE GROWTH

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Foreword

After two decades of low growth and persistent deflation, Japan is showing signs of renewed economic dynamism. Much credit goes to Prime Minister Abe's 'three arrows', particularly the first arrow of monetary easing. The second arrow, fiscal expansion, is constrained by the high level of public debt and ongoing demographic ageing.

The key to Japan's revitalisation lies in the third arrow, which has yet to be deployed in earnest. In particular, the country needs a structural reform package to narrow the productivity gap with leading OECD countries, make it easier for women to combine work and motherhood, and increase the labour participation of older citizens.

To boost productivity, Japan needs action on various fronts. First, the growing dualism in its labour market should be corrected. Efforts to reduce high employment protection and long working hours for workers with regular contracts should be complemented by initiatives to enhance the skills and social security coverage of non-regular workers. Tackling labour market dualism would also enhance social cohesion, raising the incomes of poorer households and improving their work security. It would also help address gender imbalances, as many of those in non-regular jobs are women.

A second line of action involves lowering barriers to competition, particularly in the services sector and in general for new firms. Japan's integration into the world economy also needs to progress through further trade liberalisation and by boosting inward foreign direct investment. Reform should also proceed in agriculture to promote farm consolidation and untie farm support to specific commodities.

A third reform axis is for Japan to revisit its innovation policy and enhance the role of knowledge-based capital, engaging further its businesses and academics in international innovation networks. Japan could also benefit further from its leadership in renewable energy technologies by laying out a more predictable policy environment for a greener energy supply.

Structural reform would offer much needed support to the first two arrows of Abenomics, infusing the economy with a new dynamism and fostering greater flexibility and resilience. While embarking on this reform path, Japan can share its experience with those of other OECD countries, just as it has done over the last fifty years of OECD membership.

Following its accession to the OECD in 1964, Japan returned to the international economic community. Fifty years on, Japan finds itself experimenting new policies to leave behind two decades of deflation and slow growth. The results so far have been encouraging. But only the third arrow can help Japan regain its primacy as a leading economic powerhouse and raise the well-being of its citizens on a sustainable basis.

The time for change is now. In its long history, Japan has many times been able to achieve transformational change in its society. Japan finds itself in one of those moments that requires unwavering leadership to transform attitudes and adopt long-established best practices. The OECD stands ready to accompany the government in this endeavour.

Angel Gurría
Secretary-General OECD

1. Introduction

Prime Minister Abe's three arrows – a bold monetary policy, flexible fiscal policy and a growth strategy – launched in 2013 have created a new sense of optimism in Japan and a rising level of business confidence. The 2012 downturn has been reversed by five consecutive quarters of growth. Industrial production recently surpassed its level prior to the tragic 2011 Great East Japan Earthquake. Inflation has also turned positive, and is gradually approaching the 2% target. On the other hand, the third arrow of Abenomics, structural reform, is yet to be fully deployed. To revitalise Japan, and continue improving living standards across the population, concerted efforts are needed across a number of policy areas, from raising female labour force participation to unleashing competition and boosting innovation. Japan also faces a major opportunity and challenge to accelerate the move towards renewable energy.

The initial results of Abenomics have been impressive

The challenge for Abenomics is to revitalise Japan by addressing a number of difficult challenges. Persistent deflation for more than a decade has been a headwind to growth. Sluggish output growth and rising public spending, due in part to population ageing, have pushed gross public debt to nearly 230% of GDP, raising concerns about fiscal sustainability. Rapid population ageing and weak integration in the world economy have reduced Japan's growth potential to less than 1%.

The first two arrows were launched in early 2013, with a fiscal stimulus package and the introduction of "quantitative and qualitative monetary easing" (QQE) to achieve the new 2% inflation target. These initiatives helped to boost business confidence to its highest level since the 2008 crisis, while the Nikkei stock price index increased by 57% in 2013, its largest gain since 1972. Output growth accelerated to an annual rate of more than 3% in the first half of 2013, the fastest among the G7 countries, before slowing in the second half of the year. The new monetary framework has helped boost inflation expectations, with underlying inflation moving into positive territory in late 2013, due in part to a 20% depreciation of the yen in trade-weighted terms. The unemployment rate has also fallen gradually, reaching 3.7% in early 2014.

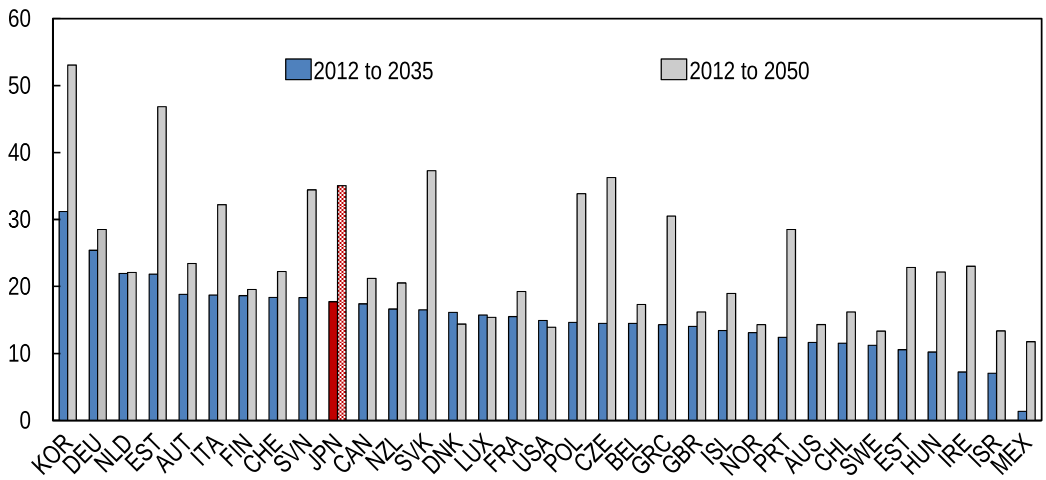
However, there are a number of risks and headwinds to the economic outlook. *First*, the world economy, and in particular, emerging markets have slowed recently, creating a drag on Japanese exports. *Second*, wage growth has remained close to zero, while headline inflation has risen to a year-on-year rate of around 1½ per cent. The loss in purchasing power will slow private consumption growth. *Third*, the large-scale fiscal consolidation needed to achieve Japan's target of a balanced primary budget by FY 2020 will hold back demand growth through the rest of this decade. *Fourth*, Japan's demographic ageing will intensify in the coming decades, lowering its potential growth rate further.

To offset these trends and maintain the economic momentum achieved by recent monetary and fiscal policy measures, the government needs to deploy its third arrow effectively to promote Japan's growth potential. In particular, the long-term success of Abenomics ultimately depends on major reforms to increase labour force participation and raise productivity (**Chapters 3 and 5**).

Population ageing is putting further pressure on already highly-stretched public finances

Japan's demographic evolution is a major challenge to its long-term economic performance. Its total fertility rate is currently at around 1.4 children per women, among the lowest in the OECD. The Japanese population also has one of the longest life expectancies in the world, and one the highest proportions of elderly citizens; more than 20% of its population are aged over 65. Its labour force has been in slow decline since the late 1990s. Going forward, these demographic trends will impose an increasingly heavy burden on the economy. Based on current projections, Japan will experience one of the largest increases in the total dependency ratio in the OECD, from around 60% today to more than 95% in 2050. Its working-age population is projected to shrink by 40% by 2050.

Figure 1. Change in total dependency ratio



Note: The total dependency ratio is population aged under 15 or 65 and over divided by population aged 15-64 (working age).

Source: *OECD Population Statistics database and Economic Outlook database.*

In addition to slowing economic growth, population ageing will put pressure on public finances, which are already over-stretched. Years of accumulating deficits have left the country with a public debt burden that represents around 230% of GDP. Tackling this debt burden, via a comprehensive fiscal consolidation plan, is critical to the country's long-term performance (**Chapter 2**). Reforms to the pension, health and long-term care systems should be part of the package. Social spending doubled from 11% of GDP in 1990 to 22% in 2010, with pension and health spending together accounting for most (nine percentage points) of the increase. Restoring fiscal health will also require revenue increases in the medium term, in particular further hikes in VAT.

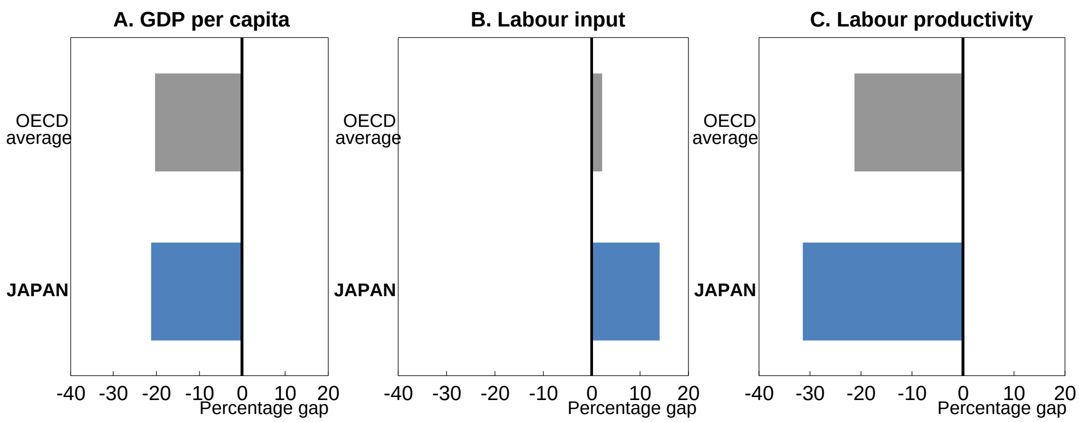
Narrowing the productivity gap is key to sustaining growth

Strong output growth is essential to improve living standards and well-being, and it will also support fiscal consolidation. In June 2013, the government adopted the "third arrow" of Abenomics -- a new growth strategy aimed at promoting private investment and improving the business environment. The strategy maintains the key target in the 2010 growth strategy, boosting Japan's real growth rate to a 2% annual pace in the 2010s. The new strategy aims at raising per capita gross national income by 40% to 5.3 million yen (around USD 53 000) by 2023.

Achieving faster growth will depend on Japan mitigating the declining labour force and on narrowing the large productivity gap with the leading OECD countries. While labour input is high, it is more than offset by a wide productivity gap; output per hour of labour input was 31% below the average of the top half of OECD countries in 2012 (Figure 2A). Over the last decade, labour productivity growth has been low compared to other OECD countries, while labour input has started to decline as a result of population ageing (Figure 2B).

Figure 2A. Explaining differences in per capita income

Japan and the OECD average relative to the top half of OECD countries in 2012[1]

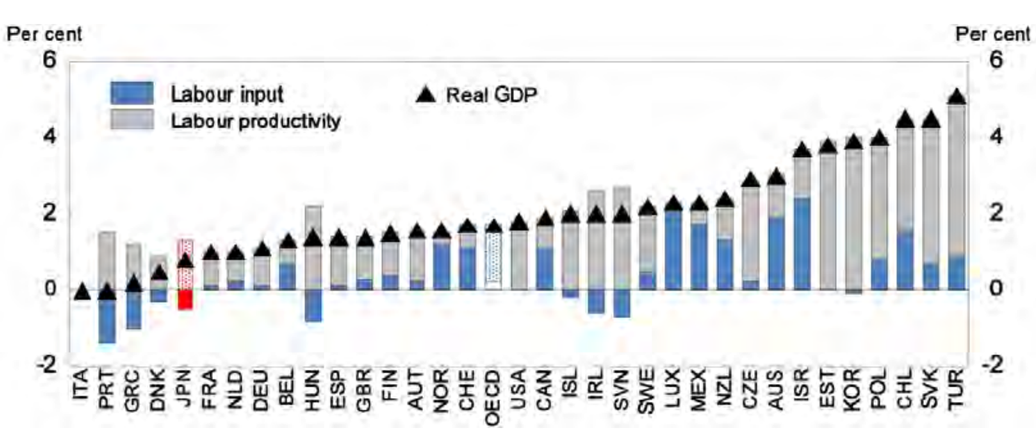


1. Compared to the simple average of the 17 OECD countries with the highest rankings. GDP per capita is based on 2012 purchasing power parities (PPPs).

Source: *OECD National Accounts, Economic Outlook and Employment Outlook Databases.*

Figure 2B. Decomposition of real GDP growth

Average annual growth rates, 2001-2012 or latest year available[1]



1. Labour productivity is calculated as real GDP by total hours worked and labour input is calculated with total hours worked.

Source: OECD, *Productivity Database*

Japan is well-placed to increase productivity. The share of adults with a tertiary education is the second highest in the OECD, while Japan consistently ranks near the top in the OECD in the Programme for International Student Assessment (PISA) for 15-year-olds and it ranked top in the first OECD assessment of adult skills (PIAAC). Japan's investment in R&D as a share of GDP is the fifth highest in the OECD. On the other hand, Japan underinvests in early (pre-primary) childcare, and training opportunities for non-regular workers are limited. Tackling these problems will help address Japan’s low fertility rates and enhance social cohesion (**Chapter 4**).

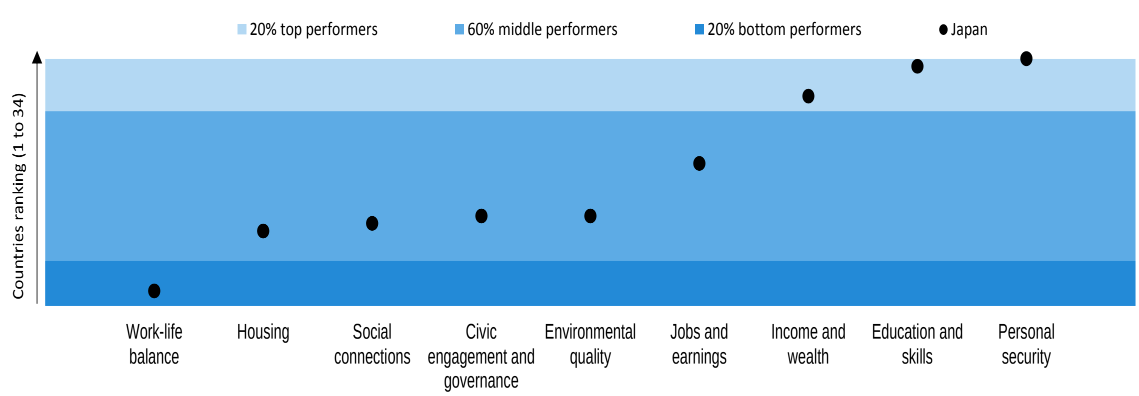
The 2013 new growth strategy is a step in the right direction, in particular its plans for agricultural reform (**Chapter 8**), which will increase consumer welfare by reducing food prices, facilitate Japan's participation in regional trade agreements and promote Japan's global value chains (**Chapter 6**). At the same time, more can be done to enhance the openness of the Japanese economy to foreign knowledge and technology and to facilitate the establishment and growth of new firms by improving the business climate (**Chapter 7**). Regulatory reform to strengthen competition economy-wide is also essential to boost productivity (**Chapter 5**). The revised growth strategy planned for mid-2014 should launch bold reforms across the board to raise Japan's growth potential.

High levels of well-being on average, but growing disparities

Over the last two decades, Japan's per capita income has fallen from 1% above the top half of OECD countries in 1992 to 21% below in 2012, placing it in the middle of the 34 Member countries (Figure 2A). On the other hand, some other measures of well-being have continued to improve. Japan has the highest score in the OECD on life expectancy and one of the highest levels of educational attainment and skills, and it performs well in many other aspects of well-being such as personal security (Figure 3).

At the same time, Japan ranks well below the OECD average in other areas, notably housing conditions and work-life balance, which may contribute to Japan's low birth rate. In recent decades, Japan has also experienced an increase in income inequality and relative income poverty, which is now the sixth highest in the OECD area. Breaking down labour market dualism and improving equity in the education and training systems will be essential to reducing these inequalities and promoting social cohesion (**Chapter 4**).

Figure 3. Japan’s well-being performance, selected dimensions



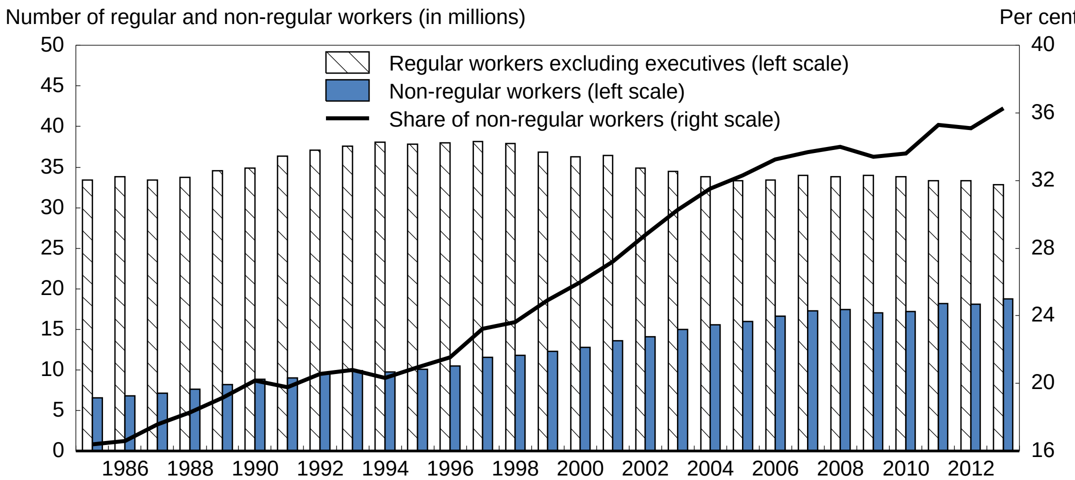
Source: *How’s Life? 2013 – Measuring Well-Being.*

As labour inputs will fall significantly, introducing reforms to make the most of Japan's human resources, including women, older persons and youth, will be critical. In particular, the tax and social security systems and inadequate childcare facilities create work disincentives for secondary earners, primarily women. Addressing these problems and achieving equal treatment of women in the workplace, especially working mothers, would boost women’s contribution to the economy, help tackle the effect of demographic ageing, and strengthen gender equality (**Chapter 3**).

Correcting labour market dualism

Inequality in general and gender differences in pay and employment prospects in particular also result from the disparities between regular and non-regular workers, two-thirds of whom are women (**Chapters 3 and 4**). There has been a steady increase in non-regular workers in Japan since the mid-1980s, from 16% of employment in 1985 to over one-third in 2012 (Figure 4). As non-regular workers are paid substantially less than regular workers, the rising share of non-regulars has contributed to increased earnings inequality. Increasing labour market dualism also has negative implications for long-term productivity growth as firms invest less in training non-regular workers.

Figure 4. The share of non-regular workers is rising[1]



1. Data are for February for each year through 2001 and for the first quarter in 2002 and onward.

Source: *Ministry of Internal Affairs and Communications, Labour Force Survey.*

Furthermore, at least part of the gap in hourly wages between regular and non-regular workers can be attributed to discrimination. Non-regular workers have less employment security and bear the brunt of cyclical changes in employment. Only around half of non-regular workers are enrolled in firm-based health, pension and employment insurance schemes. Exclusion from firm-based health, pension and employment insurance schemes for non-regular employees working less than a minimum number of hours leaves them vulnerable to poverty in the event of job loss or retirement. The large share of low-paid, non-regular workers also helps explain why Japan has the fifth highest rate in the OECD of in-work poverty.

Japan needs to implement a comprehensive strategy to tackle labour market dualism, increasing social insurance coverage and providing training opportunities for non-regular workers and reducing effective employment protection for regular workers.

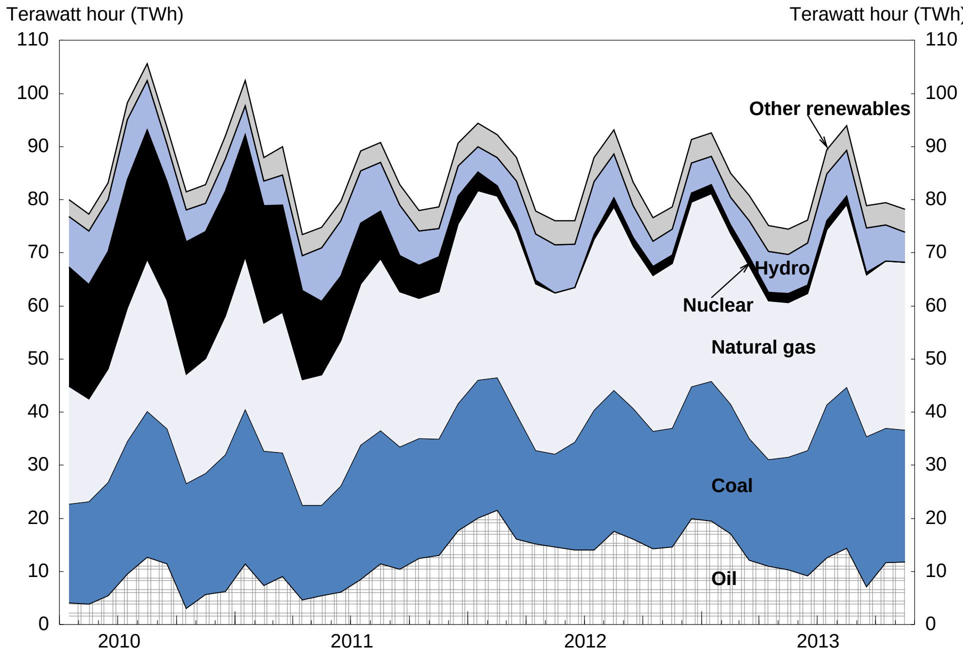
Challenges for low-carbon electricity supply

Japan is the world's fifth-largest electricity user. Before the 2011 Fukushima accident, nuclear power provided around one-third of total supply. After the accident, all 50 nuclear power plants were gradually shut down and since August 2013, they are not producing any electricity at all. This has fundamentally changed the supply mix (Figure 5). Electricity has become more expensive, which in turn is hurting industry and households in times of economic stress. CO_2 emissions have increased, too. Sharply increased fossil fuel imports have been the main factor behind Japan's recent trade deficits, the first in decades.

Japan will face a challenge in scaling up significant volumes of cheap low-carbon electricity without nuclear power. This has been recognised in the recent release of the draft energy strategy, which still supports nuclear but with more prominence now being given to renewables. Currently, 17 reactors have applied for start-up, which will alleviate the growing dependency on expensive, high-carbon energy sources. The timing of these restarts has not been specified but a 'fast track' process has been mentioned by the regulator for specific cases. The government needs to address what role nuclear power should play in the longer term energy mix (**Chapter 9**).

Green growth should also be promoted by a clearer long-term commitment to renewables and increases in environmental taxes. Such a policy would also help Japan lower its carbon emission targets to those in place before the Fukushima accident.

Figure 5. Monthly electricity generation by source, April 2010 to November 2013



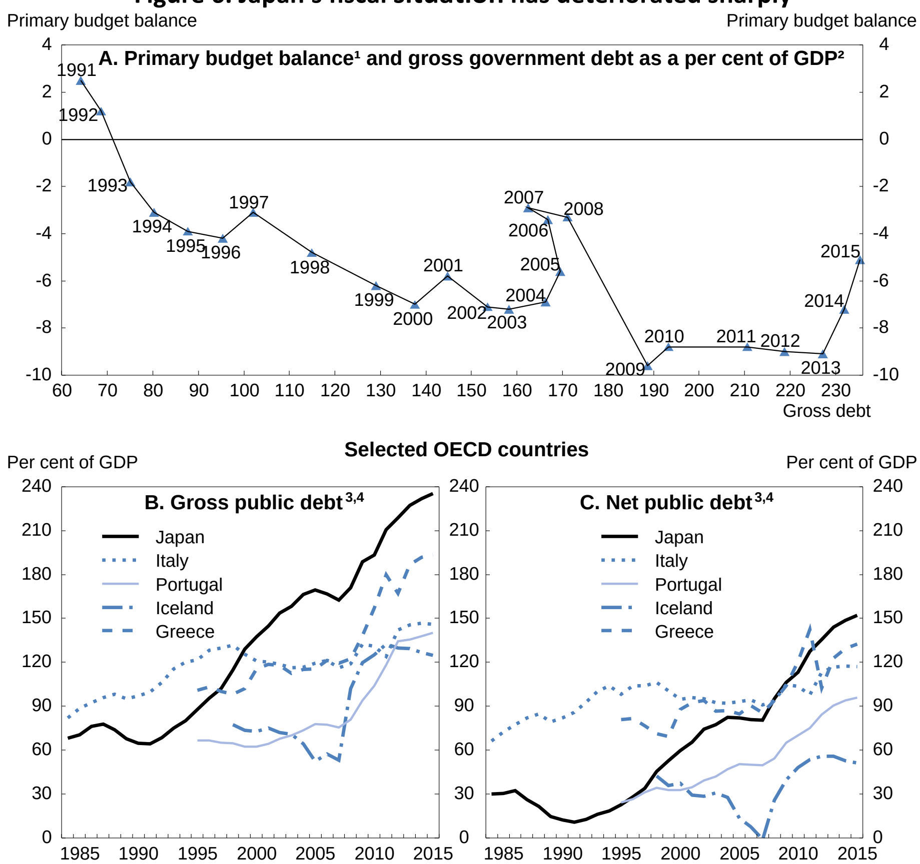
Source: *IEA Monthly Electricity Survey.*

2. Addressing the sustainability of government finances

While the recent fiscal stimulus package has helped boost output growth and push inflation into positive territory, the government needs a medium-term strategy to stop and eventually reverse the run-up in the public debt to GDP ratio. The decision to raise the consumption tax rate from 5% to 8% in 2014 and the planned, further increase in 2015 to 10% are important first steps. But they need to be complemented with a comprehensive fiscal consolidation plan, including reforms to pension and health entitlements.

Japan is increasingly vulnerable to a loss of market confidence in the sustainability of its public finances. More than two decades of budget deficits have driven gross public debt from 70% of GDP in 1992 to an estimated 230% in 2014, the highest ever recorded in the OECD area (Figure 6). Net public debt is also the highest in the OECD, and is estimated to reach over 140% of GDP in 2014. Rising government spending has been driven by social security outlays, which have doubled from 11% to 22% of GDP between 1990 and 2010, reflecting rapid population ageing. Meanwhile, a prolonged period of weak economic growth and tax cuts have constrained revenue.

Figure 6. Japan's fiscal situation has deteriorated sharply



1. Excluding one-off factors, which were about -5% of GDP in 1998 and range from +0% to +2% of GDP between 2000-15.
2. OECD estimates for 2013 and projections for 2014-15.
3. The five countries with the highest gross debt ratios in the OECD area in 2012.
4. OECD estimates for 2013 and projections for 2014-15.

Source: *OECD Economic Outlook, No. 94.*

The fiscal outlook remains worrying

The government's 2014 long-term projections show the primary budget (central and local governments) remaining in deficit through 2023, even assuming the planned hike in the consumption tax rate to 10% in 2015. The projection is based on optimistic assumptions, such as real GDP growth of 2%, more than twice as high as Japan's potential growth rate at present.

The impact of the extraordinary level of debt has been mitigated thus far by low long-term interest rates, in part due to large purchases of government bonds by the central bank. However, such a situation will not last forever. A further rise of public debt into uncharted territory would increase the risk of a rise in interest rates, with a negative impact on the financial sector, fiscal sustainability and growth. The challenge is to improve the fiscal situation before the era of low interest rates ends.

Japan needs a detailed and credible fiscal consolidation plan

Achieving the government’s goal of a primary budget surplus (for central and local governments) by FY 2020 and putting the public debt ratio on a downward trend require a detailed and credible fiscal consolidation plan specifying spending cuts and revenue increases. Given that the increase in government spending is largely driven by public social expenditures, social security reform is necessary to controlling outlays. Reforms to the health system should include expanding the use of generic medicines and promoting the role of generalist doctors to reduce the number of unnecessary consultations with specialists. Given Japan’s demographic profile, further increases in the retirement age will also be necessary.

Other pension policy priorities are to abolish the right of firms to set a mandatory retirement age at 60 and to consider expanding the investment options of the public pension fund to improve its performance. At USD 1.3 trillion, the Japanese Public Pension Investment Fund is the largest in the world but remains heavily invested in domestic governments bonds (55% of total assets) and domestic equities (17%). Strengthening its governance and independence from government would allow the fund to seek a better risk-return trade-off.

There is limited scope for other spending cuts, as government spending, excluding interest payments and social security expenditures, is already the fifth lowest in the OECD as a share of GDP. Consequently, revenue increases are inevitable. To limit the negative impact on growth, revenue should be raised primarily through further hikes in the consumption tax and other indirect taxes, as well as a broadening of income tax bases.

OECD experience also suggests that a stronger fiscal policy framework would bolster the credibility of a medium-term fiscal plan. This requires a mutually reinforcing framework of budget procedures, fiscal rules and oversight by an objective fiscal body at arm’s-length from the policy-making process to monitor and evaluate progress in implementing the plan. The government should set fiscal targets (a primary budget surplus) that are sufficient to stabilise the debt ratio in the coming years. Fiscal targets should have a strong legal foundation to strengthen their credibility. Such a framework would be particularly helpful in Japan, given the unprecedented size of its debt ratio and the likelihood of rising interest rates over the medium term.

The large fiscal consolidation needed will be a significant headwind to output growth in coming years. Sustaining nominal output growth is therefore crucial to reduce the public debt ratio. Consequently, boosting Japan's growth potential through structural reform (the third arrow of Abenomics) and achieving the inflation target (the first arrow) are essential elements of a successful fiscal consolidation strategy.

Key OECD Recommendations

- Develop a more detailed and credible **fiscal consolidation plan**, including spending targets by category and a timetable for tax hikes, to maintain confidence in the fiscal situation and prevent a run-up in interest rates.
- Aim for a **sufficiently large primary budget surplus** to stabilise the debt ratio by 2020.
- **Reform social security** to limit spending increases, particularly in health and long-term care, while ensuring the sustainability of public pensions by further increasing the retirement age and tying it to life expectancy.
- Implement the **planned increase in the consumption tax rate to 10% in 2015**, while maintaining a single rate to avoid the distortions and poor targeting associated with multiple rates.
- **Rely primarily on the consumption tax and other indirect taxes**, such as environment-related levies, as well as the broadening of income tax bases, to boost government revenue.
- **Improve the fiscal policy framework** to bolster confidence in a medium-term fiscal plan.

3. Combining work and family life: a “New Deal” for Japanese women

Japanese women often have to choose between babies and bosses. This affects birth-rates, female employment rates and career progression. Japan needs to change public policies and workplace practices to help parents combine better their work and family commitments. Enabling women to work more and in better jobs, whilst facilitating child-rearing, would mitigate the looming, ageing-related decline in the size of the labour force, boost economic growth, and strengthen gender equality.

Gender gaps are large

Employment outcomes in Japan show large gender differences. At 84%, the male labour force participation rate is 21 percentage points above that of women; the gender pay gap at median earnings is 27%, the second highest in the OECD, and less than 5% of listed company board members are female, the second lowest proportion in the OECD.

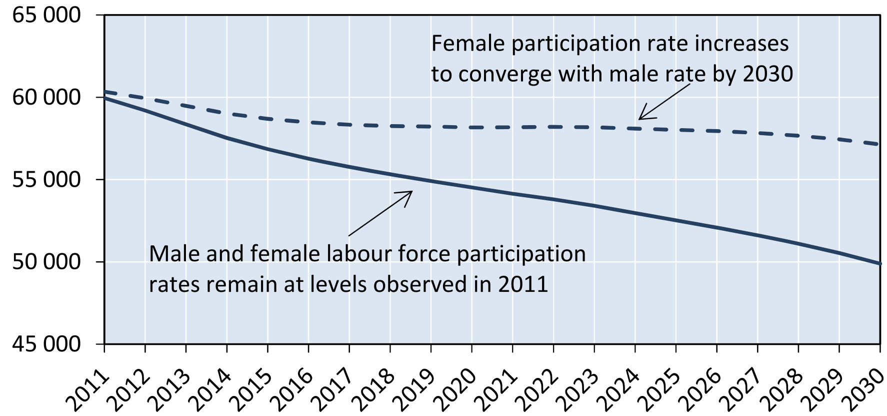
Gender differences in pay and seniority are strongly linked to the dual labour market (see Chapter 4). Women make up 70% of the relatively low-paid non-regular workers, frequently working part-time, while men make up 70% of regular employees, whose remuneration is seniority based and who have considerable employment-security in return for which they put in long working hours, including unpaid overtime and unused parental leave. In such a workplace culture, it is very difficult for regular employees to be fully involved in caring for children or elderly parents.

More than 60% of female workers withdraw from the workplace when their first child is born. As a result, Japanese employers are less likely to invest in women’s career opportunities. Even when young women enter regular employment upon completing university, they generally enter the more routine "ippan-shoku" career stream, and are unlikely to enter fast-track “sougou-shoku” career streams that groom workers for higher management. This reinforces gender imbalances and represents a substantial opportunity cost for society. After all, 63% of young women (25-34 years) in 2011 had a university degree compared to 55% of young men.

Japan needs to make more efficient use of women and their skills while facilitating family creation: greater involvement of women in the labour force is critical to addressing the looming labour shortages and hence to sustaining economic growth. To illustrate the potential gains: if female employment rates were to converge with male employment rates over the next 20 years, the fall in labour supply would be limited to 5% (Figure 7), increasing GDP by almost 20% over two decades compared to unchanged participation rates (OECD, 2012). With unchanged participation rates, the labour force is expected to contract by 17% by 2030 and by 40% by 2050.

Figure 7. Increasing female employment can help avoid looming labour supply shortages

Projected size of the labour force, thousands of people



The labour force projections are based on population projections for persons aged 15-64 years; the scenario depicted in the dotted line in the chart assumes that the labour force participation rate for men remains constant from 2011 to 2030 while the labour force participation rate for women gradually increases from 2011 to 2030 reaching the 2011 level for men by 2030. The solid line assumes unchanged participation rates for both men and women.

Source: *OECD (2012), Closing the Gender Gap – Act Now. OECD Publishing, Paris.*

Changing the policy mix and workplace cultures

Social policy can help foster change. For example, while pre-schools cover almost all of the 4 and 5-year olds, there are still considerable capacity constraints and long waiting lists for day-care for very young children, especially in the Tokyo area. In 2010 public spending on day-care and pre-school facilities amounted to 0.4% of GDP, around one-third of what Denmark, France or Sweden invest in this area. Furthermore, the Japanese tax/benefit model provides strong financial incentives for spouses to limit their earnings: spouses with earnings below around one million yen (about 30% of average earnings) are exempt from income tax and if their earnings are below 1.3 million yen, they are covered by their spouse's pension, health and long-term care insurance, without paying contributions themselves.

Japanese labour market institutions also need changing. Remuneration systems and career progression should be based on performance rather than seniority, while the talent pool of workers can be expanded by facilitating "mother returners" and part-time workers to get back into regular employment. Importantly, the long hours culture needs to be curtailed so that workplaces become attractive to both fathers and mothers. Leadership in workplaces will be key to change traditional attitudes to women’s careers. To foster change, companies could be required to disclose information on family-friendly workplace practices.

Key OECD Recommendations

- Reform the **tax-benefit system** so that both parents have broadly similar financial incentives to work.
- Invest more in good quality, affordable **childcare** (especially at early ages) to foster child development and help parents better reconcile work and family commitments.
- Require that companies publicly report on their **family-friendly workplace practices**, including on the prevailing working hours, the number of leave days taken by managers, the number of "mother returners" and part-time workers in regular employment and the number of women in senior management positions.

4. Fostering social cohesion: labour market and education reforms

Widening inequality in Japan is partly due to factors affecting all advanced economies, such as technological progress that favours workers with advanced skills. It also reflects factors specific to Japan: a highly dualistic labour market and inequality in educational outcomes resulting from the educational system's heavy reliance on private spending. Education and labour market reforms are needed to reverse rising inequality and foster social cohesion.

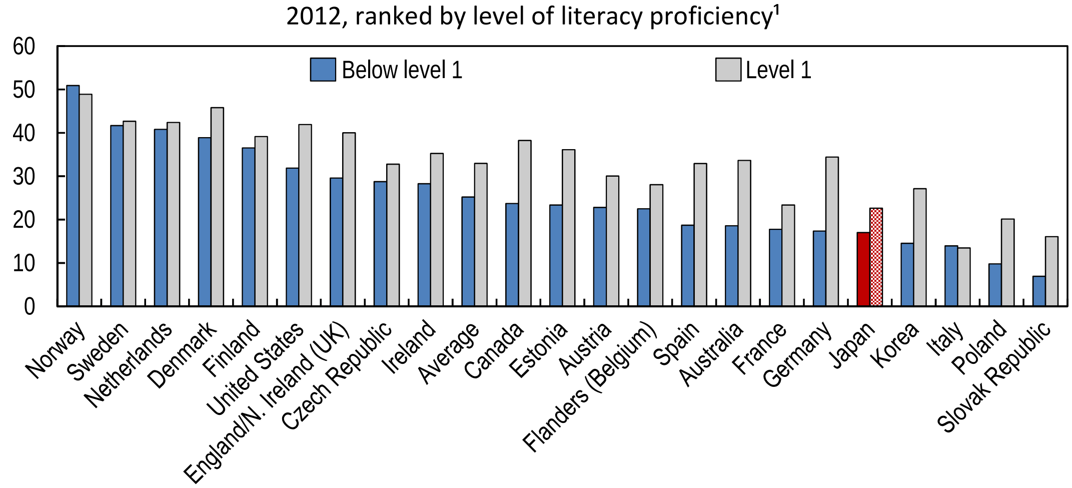
Policies are needed to reverse growing labour market dualism

Japan's growing problem of labour market dualism is a source of growing inequality and restrains productivity growth. Tackling dualism in Japan requires comprehensive policy reform. First, workplace-based social security coverage needs to be increased for non-regular workers. For employers, cutting labour costs, through lower wages and exemption from co-payments for social insurance, is an important reason for hiring non-regular workers. The second axis of the reform strategy is upgrading training programmes for non-regular workers (see below) and preventing discrimination against them.

A third source of dualism is differences in employment protection rules. While both fixed-term and temporary work agency contracts are relatively deregulated, employers face practical difficulties and uncertainties with regards to the dismissal of regular workers. Indeed, the Labour Contract Law states that any dismissal of workers that is not objectively justifiable and that is not considered to be acceptable by society's standards shall be deemed an abuse of power and is therefore invalid. This suggests a need for reducing effective employment protection for regular workers.

Figure 8. Percentage of all adults who participate in adult education and training

2012, ranked by level of literacy proficiency[1]



1. Countries are ranked in descending order of the percentage of adults scoring below Level 1 in literacy in adult education and participating in training during year prior to the survey.

Source: *Survey of Adult Skills (PIAAC) (2013).*

Refocusing education and training spending

Japan is a top performer in education both in terms of quality and quantity. Japanese 15-year olds had the highest scores amongst OECD countries in the 2012 PISA study and enrolment rates in tertiary education are amongst the highest in the OECD. Japanese adults also had the highest average scores in the recent OECD assessment of numeracy and literacy skills (PIAAC). On the other hand, low-skilled adults – who make a large part of non-regular workers – have limited access to training. Indeed, the percentage of this group who participate in adult education is among the lowest of the OECD countries that participated in the OECD skills study (Figure 8).

Japan also underinvests in early childcare and pre-primary education. Public investment in pre-primary education was the second lowest in the OECD in 2009. The pressures on public finances stemming from population ageing, with the associated demand for social services, will tend to squeeze education spending. Yet, making education and child-rearing affordable is critical to tackle falling fertility. Efficiency and value for money could be improved by reallocating education budgets to combine early childhood education and childcare.

Adapting education to a changing world

Economic value increasingly stems from the capacity of individuals to innovate and collaborate rather than through vertical command and control structures. OECD PISA results have shown that despite significant progress over the past decade, many Japanese students still struggle with tasks that require the creative use and application of knowledge in novel situations. Continued reform of standards and curricula, and developing teacher capacity to implement these effectively, will be essential.

The OECD Tohoku School project, a joint project of the OECD and Japan's Ministry for Education and other local stakeholders, is a promising example of educational reform. The project's open 'innovation framework' – characterised by shared leadership, experimentation with new pedagogies and a strengthened sense of local ownership among the participants – has resulted in fostering entrepreneurship and other key skills. It has also inspired changes in the way external partners, such as community and business leaders, work with teachers.

The Japanese university entrance examination system does not incentivise school teachers to innovate in either curricula or pedagogy. The prominence of private, after-school lessons ('juku') raises equity concerns as juku attendance rises with family income. Reforming the university entrance system could raise the quality of learning outcomes and the impact of curricular reform and reduce the prominence of juku, which would help improve equity in learning opportunities and decrease the financial burden on households.

Key OECD Recommendations

- **Reduce labour market dualism** by (i) continuing to expand workplace-based social insurance coverage for non-regular workers, providing them with quality training and preventing discrimination against them; and (ii) reducing effective employment protection for regular workers.
- Continue to ensure access to **affordable, high-quality early childhood education and care**.
- **Reform the** university **entrance system**, which can help reduce reliance on private, after-school lessons such as *juku.*
- **Encourage more creativity and inclusiveness in the school curriculum**, drawing upon such promising examples as the OECD Tohoku School project.

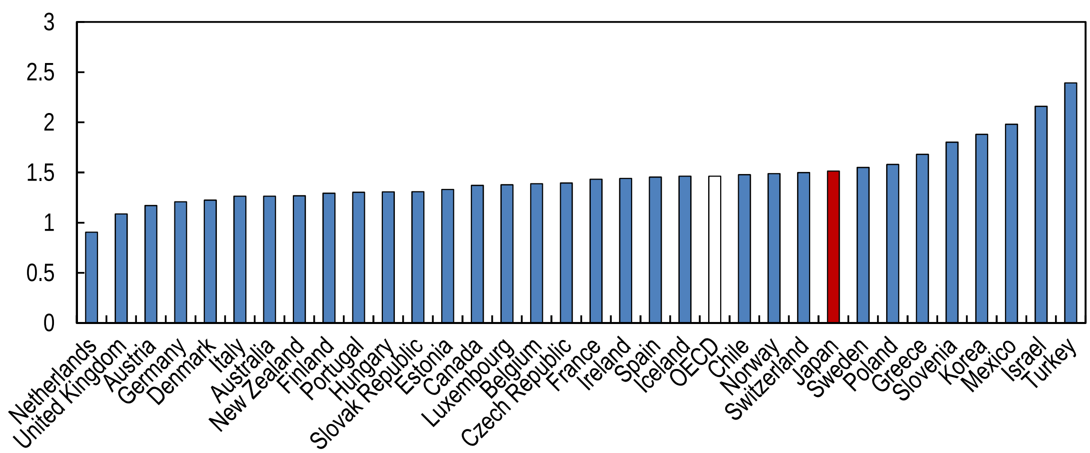
5. Lowering barriers to product market competition

Japan has set a target of boosting output growth to 2% in real terms, well above its average of ¾ per cent per year over the past decade. Narrowing the large productivity gap with the most advanced countries through bold structural reform in all sectors is central to raising Japan's growth potential. A top priority is reforms to strengthen competition in services, which account for 70% of value-added and employment.

Barriers to product market competition remain relatively high

Boosting competition in product markets is a prerequisite to higher productivity growth. In Japan, product market regulations significantly limit competition and investment, especially in the service sector (Figure 9). To boost service productivity, which has lagged behind that in manufacturing in recent years, competition policy should be further upgraded by reducing exemptions to the Anti-Monopoly Act, increasing administrative fines and ensuring a level playing field by phasing out the special treatment of SMEs, which play a major role in services. In addition, entry barriers should be reduced, as international comparisons indicate that starting a business in Japan is relatively complicated, costly and time-consuming.

Figure 9. Product market regulations restricting competition[1]
Index scale from 0 (least restrictive) to 6 (most restrictive)



1. The product market regulation (PMR) indicator measures the extent to which policy settings promote or inhibit competition in areas of the product market where competition is viable. The reported indicators for Mexico, Poland and Turkey are based on preliminary estimates as some of the underlying data has not been validated with national authorities. Subsequent data validation may lead to revisions to the indicators for these countries.

Source: *Koske, I., I. Wanner, R. Bitetti and O. Barbiero (2014), "The 2013 Up-date of the OECD Product Market Regulation Indicators: Policy Insights for OECD and non-OECD Countries", OECD Economics Department Working Paper, forthcoming, OECD Publishing.*

Reform of the electricity sector is a priority

One of the priorities for reform is the electricity sector, which is dominated by nine regional monopolies that supply 92% of total electricity consumption. Regional interconnections have been very limited. Electricity prices in Japan are among the highest in OECD countries, lowering the competitiveness of Japanese firms. The 2011 nuclear accident revealed the weaknesses in the electricity sector; electricity surpluses in some regions could not offset shortages elsewhere due to inadequate interconnection facilities. In addition, weak market mechanisms were not able to modify supply and demand in line with current conditions.

Enhanced competition and better integration of Japan's electricity markets would help improve economic efficiency as well as energy security. In 2013, the government adopted an electricity reform plan (the Electricity Business Act), aiming at opening the electricity system to all suppliers by 2020, while ensuring supply-demand balance through competition by: *i)* creating an independent entity to co-ordinate power supply with demand nationwide; *ii)* further liberalising the electricity retail market from 2016, making it possible for more consumers to choose power suppliers that offer lower rates; and *iii)* introducing legal unbundling by the end of the decade to promote fair competition.

While the reform is introduced at a time of great uncertainty associated with nuclear energy, it presents the potential to attract new investments. The government needs to focus on implementing the ambitious and challenging reform without delay.

Key OECD Recommendations

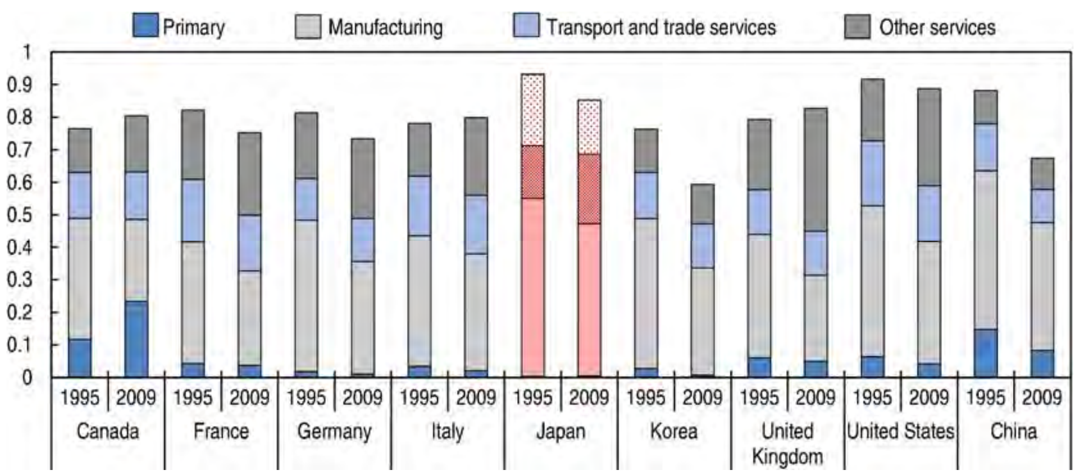
- Boost productivity in the service sector through **reforms to strengthen competition**, in particular by upgrading competition policy via a reduction in exemptions to the Anti-Monopoly Act.
- Promote entrepreneurship and business start-ups by **reducing entry barriers**.
- **Create a more competitive electricity sector** by fully and effectively implementing the Electricity Business Act.

6. Maintaining the edge on global value chains

International trade has played a significant role in Japan's economic development since the 1950s. Today, Japan remains a major exporter of high value-added goods and it is deeply integrated in global value chains. However, the economy would benefit from further integration into world markets. This can be achieved by pursuing further regional trade agreements, advancing on the Trans-Pacific Partnership and removing barriers that discourage inward foreign direct investment.

The international fragmentation of the production of goods and services is a prevailing feature of today's world production and trade. The OECD-WTO Trade in Value-Added (TiVA) database provides insight into Japan's integration into, and specialisation within, global value chains (GVCs) by tracing the value that is added by each industry and country along the production chain. For example, Japan's domestic value-added content of gross exports is relatively high (85% in 2009) compared to the OECD average (71%), but is similar to that of the United States (Figure 10) and to the European Union as a whole. This partially reflects Japan's specialisation in the production of advanced parts and components that are exported to emerging economies for final assembly, but also other factors such as geographic location and the size of the economy, giving Japan greater scope to source inputs within its own borders. Japan's share of foreign value added in its gross exports has more than doubled between 1995 and 2009 (from 7 to 15%), revealing deepening integration into global value chains.

Figure 10. Domestic value added content of gross exports



Source: *OECD TiVA Database, May 2013.*

The TiVA indicators also offer new insights into bilateral trade flows. China is Japan's largest trading partner in gross terms, followed by the United States. When measured in value-added terms, however, these positions are reversed, better reflecting the nature of the underlying supply and demand relationships.

In value-added terms, about 40% of Japan's total exports can be attributed to the service sector. Although this is more than double the share of exports of services recorded in conventional trade statistics (about 15%), it is still relatively low compared to the OECD average (48% in 2009). This is partly explained by a relatively high proportion of manufactured goods exports compared to some other OECD countries (such as the United Kingdom and the United States with relatively high direct services exports). It may also be partly due to a relatively higher vertical integration of manufacturing and related business activities including design, development, marketing, sales, warranties, and after-sales care within Japanese companies. This indicates potential scope for increased efficiencies within the manufacturing sector through outsourcing of non-core services activities.

Further integration into world markets is possible and desirable

Growth in productivity can be accelerated by furthering Japan's integration in world markets. Pursuing comprehensive regional trade agreements (RTAs) with major trading partners would further enhance Japan's openness to the world. Japan has implemented 13 RTAs in the past decade, covering about 19% of Japanese exports and imports. The Revitalisation Strategy announced in 2013 sets a goal to increase this ratio to 70% by 2018. Notably, in 2013, Japan joined the Trans-Pacific Partnership negotiations and launched negotiations for a free trade agreement with the European Union. This is a welcome development and a further indication of Japan's commitment to open markets.

Promoting foreign direct investment into Japan

Another important driver of integration is foreign direct investment (FDI). Japan's overseas FDI has risen substantially, boosting investment income generated by its affiliates abroad from 0.1% of GDP in 1999 to 1.1% in 2013. However, Japan's stock of outward FDI remains relatively low compared to similar sized economies and Japan's stock of inward FDI is the lowest among OECD members at 3.5% of GDP in 2012.

The June 2013 plan sets an objective to double the stock of inward FDI to 35 trillion yen (7% of GDP) by 2020. This would require reducing barriers that discourage FDI and improving the business climate. This is to be accomplished in part by the creation of "National Strategic Special Zones", which are intended to create business-friendly environments by liberalising rules on land use, private education and health care (such as hospital bed regulations).

Going further, reforms are also needed to promote better access to cheaper or higher quality imported inputs and stronger competition and regulatory reforms in the service sector (Chapter 5).

Key OECD Recommendations

- **Continue to pursue comprehensive regional trade agreements** with major trading partners, including by scaling back protection in sectors where it is highest, with the view of consolidating these reforms within the multilateral trading system.
- **Reduce non-tariff barriers and accelerate regulatory reforms**, particularly in the service sector, with a view to increasing productivity and innovation.
- **Improve the climate for FDI inflows by further liberalising trade**, lowering barriers that discourage inward foreign direct investment, simplifying administrative procedures and improving market access.
- Ensure a **speedy establishment of the National Strategic Special Zones**, and consider its extension to other areas.

7. Strengthening innovation

Innovation is key to enhancing productivity and helping firms benefit from global value chains. Japan is amongst the world's largest investors in science and innovation, spending more than 3.3% of GDP on research and development (R&D) in 2012, the fifth highest in the OECD area. Notwithstanding the strength of its science base, Japan's innovation performance faces important challenges. The large investment in science and innovation has not translated into strong productivity growth and business investment in R&D in 2012 was still below pre-crisis levels. Japan's overall investment in KBC also lags that of other major OECD countries. Japan needs to continue improving the conditions for KBC and become more receptive to foreign knowledge and technology.

Innovation is recognised as an important element of Japan's Industry Revitalisation Plan, which is part of the third arrow of Abenomics. Japan scores highly in most innovation indicators. In addition to its high R&D expenditure, it accounted for the fifth largest number of scientific publications in the world between 2003 and 2011. However, business sector investments in knowledge-based capital, which includes data, software, skills and organisational capital, is around 10% of market sector value added, below other major OECD countries.

Boosting knowledge-based capital

Better-functioning labour, product and financial markets would facilitate investment in KBC, as they enable capital, labour and other resources to flow freely to KBC-intensive firms. Attention is also needed in ensuring that the policies affecting different types of KBC – including intellectual property rights, design, data, skills, management and organisational capital – support its growing role for business and for economic growth.

Japan also lags in international collaboration in science and innovation; only just over 20% of scientific publications involve international co-authors; less than 5% of the patents invented in Japan involve foreign co-inventors, and less than 30% of large firms engage in international collaboration in innovation. International collaboration is of growing importance for science and innovation to share costs and risks, and enables access to foreign knowledge. In scientific research, international collaboration tends to be associated with higher quality, with international mobility of researchers an important driver. Enhancing international collaboration and the openness of the Japanese economy to foreign knowledge and technology would help to improve the quality of science and innovation. It would also help connect Japan's innovation system to global markets and developments in innovation.

Human resources for science and technology are another important challenge for Japan. Graduation rates at the doctoral level are relatively low compared with other major R&D-performing countries and only about 22% of doctorate degrees were awarded in the fields of sciences, engineering, manufacturing and construction in 2011, 17% of which were for women. These large differences in gender occur despite levels of educational achievement for Japanese women that are broadly the same as those of men, and in a global context where women now often outperform men in educational achievements. Enhancing the role of women in Japan's innovation system would help strengthen the supply of key human resources, and would also help strengthen diversity in the innovation system, including among entrepreneurs. Addressing this challenge will require a broad strategy, including policies to encourage women's participation in the labour force, improvements in curricula and career guidance, and improvements within the science and innovation system to improve the opportunities for women. More generally, there is a need to promote scientific research in universities.

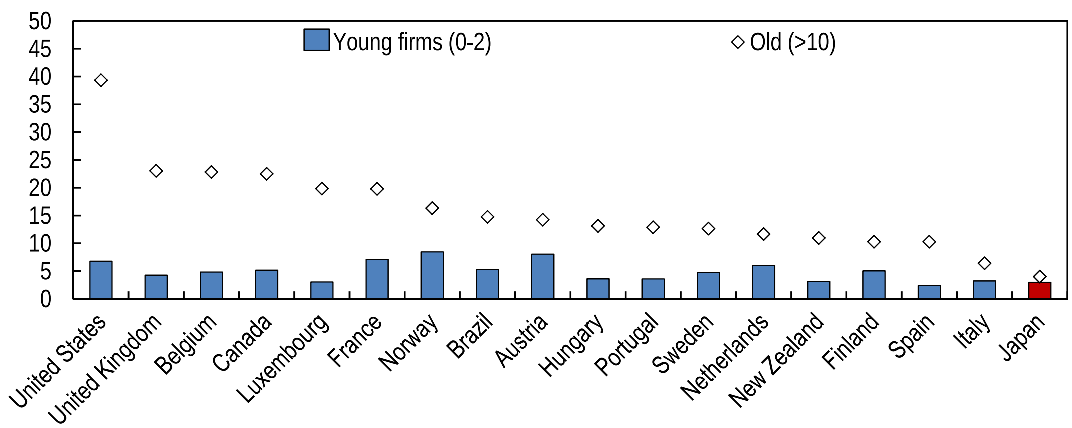
Contribution of young firms

Another important challenge for Japan concerns the contribution of young innovative firms to growth and innovation. As in many other OECD countries, young firms are an important source of employment growth in Japan. However, young firms in Japan grow only little after their entry into the market, with older firms being almost the same size as young firms (Figure 11). Young firms also account for less than 5% of all patents filed in Japan, considerably below that of other large OECD economies. The growth of young innovative firms is important to develop new areas of potential strength across the economy; moreover, young firms can be an important source of more radical innovation.

Fostering job creation and innovation in young firms requires removing barriers to their entry and growth and to their experimentation with new ideas and business models. In addition to removing regulatory and administrative barriers to new players, various initiatives should be considered: reforming bankruptcy legislation to reduce the costs of failure, improving attitudes towards entrepreneurship, enhancing access to risk capital and reforming employment protection legislation.

Figure 11. Average size of young and old firms, in persons employed, service sector

In 2011



Source: *OECD, DYNEMP project, March 2013.*

Key OECD Recommendations

- Improve **the framework conditions for investment in knowledge-based assets** beyond R&D, including big data, design, management and organisational capital.
- Enhance the openness of the Japanese economy to foreign knowledge and technology, including by encouraging greater international mobility of researchers.
- **Strengthen the engagement of women** in science, innovation and entrepreneurship.
- **Improve the business climate for young innovative firms, by** removing regulatory barriers to market entry, improving access to risk capital and reducing labour protection.

8. Reforming agricultural protection

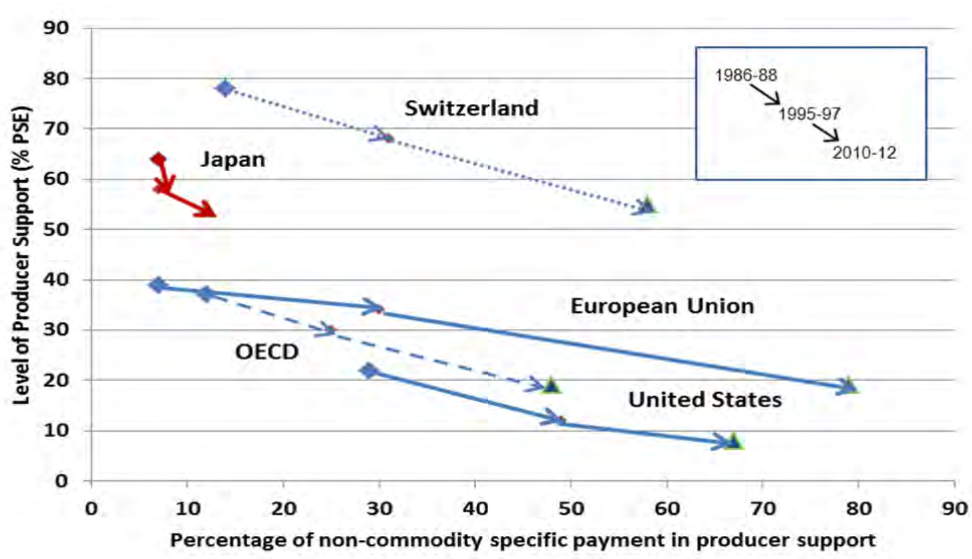
Japan's main agricultural policy challenge is to establish a competitive and sustainable agricultural sector, allowing deeper economic integration with its trading partners. The sector has a prevalence of small farms with low productivity run by elderly farmers (the average age of farmers was 66 in 2010). Japan recently announced a comprehensive agricultural policy reform plan, which includes the phasing out of the administrative allocation of rice production targets and shifting to a more targeted system of income support. Allowing farmers more freedom to make their own production decisions in response to market demands would bring more opportunities to farmers, and would allow the government to target policies to specific objectives.

Promoting the long-term growth and competitiveness of Japan's food and agriculture system

Japan has the potential to grow its agricultural industry, including by producing high-value products reflecting Japan's growing reputation for sophisticated, healthy and high-quality food. With Japan's domestic food market expected to shrink in the long-term, future opportunities for growth will be found in high-value products and new markets overseas. Japan's ambitious target to double food exports by 2020 could be met by helping its food and agriculture system to exploit its premium culinary reputation abroad rather than supporting the production of uncompetitive commodities.

Phasing out the administrative allocation of rice production targets and giving farmers more freedom to make their own production decisions is a step in the right direction. However, around 90% of producer support in Japan is still commodity specific. In contrast, many major OECD countries have moved away from this type of intervention, while also reducing the level of support (Figure 12). Japan's pattern of support constrains farmers' responses to market signals, and hinders structural adjustment of the sector.

Figure 12. Level and composition of producer support in OECD countries



Source: *OECD, PSE/CSE Database, 2013*

The next step in the reform process should be to gradually reduce diversion payments for non-staple rice crops, such as rice for feed and manufacturing, wheat, and soybeans, where Japan does not have a comparative advantage. Another step should be to allow the domestic rice price to fall thereby narrowing the gap with international prices. This would allow trade barriers that limit competitiveness to be reduced, opening up new opportunities for farmers to exploit premium markets abroad, and permitting the economy as a whole to benefit from increased trade.

Target support to the needs of business-oriented farmers

Agricultural reform in Japan should be complemented by public investments that improve the ability of the Japanese food and agriculture system to respond to market demands. A key element is investment to improve the competitiveness of business-oriented farms. While lower rice prices would not seriously impact households that manage a small plot of land as a side-business, they would have a significant impact on farmers that produce rice as their primary commercial activity. As a transitional measure, business-oriented farms could be provided with temporary, gradually declining levels of financial assistance to help them adjust. However, these payments should be decoupled from specific commodity production and, over time, either wound-down or integrated into a risk management policy package aimed at helping business-oriented farmers manage unexpected and unavoidable income shocks. A feature in Japan's recent agricultural reform plan that limits the eligibility of certain payments to business-oriented farms is a first step in this direction.

For business-oriented farms to grow and prosper, it will also be necessary to unravel the land and tax policy measures that impede farm consolidation and contribute to land being left idle. Land-use regulation should be more transparent, with a more predictable framework for conversion from farmland to non-farmland use; this will enable small farmers to make well-informed decisions on whether to hold their land, or transfer it to more efficient producers. Taxation on idle land should be increased, so as to encourage it to be put to productive use, thereby discouraging the practice of keeping land idle for speculative purposes. Farmland markets should also be more transparent so that transactions can be made on a competitive basis, including transactions through recently created intermediary organizations at the prefecture level.

Finally, Japan should consider improving agriculture innovation systems to respond more to the needs of the business-oriented farms. This includes public and private investment in demand-driven R&D, technology transfer, new product and process development, and protection of local brands in domestic and overseas markets. Benefits from these measures may not be realised instantly, but they are key elements in the long-term health of Japan's food and agriculture system.

Key OECD Recommendations

- Enhance the growth potential of Japan's agricultural sector by **promoting exports to new markets** which allow Japan to exploit its premium culinary reputation.
- Further advance agricultural policy reforms to give farmers more freedom to make their own production decisions by **reducing support tied to the production of a specific commodity**.
- **Enhance policy support to business-oriented farms** through transitional payments, demand-driven R&D, and the protection of local brands.
- **Remove policy measures that impede farm consolidation**, create obstacles for business oriented farmers and contribute to land being kept idle.

9. Green growth and climate policies

Japan is the world's fifth-largest energy user and depends on imports for more than 90% of demand. Securing energy supply has been the main driver for the country's energy policy. Following the 2011 Fukushima accident, Japan's future energy strategy will need to focus on limiting energy import costs and greenhouse gas emissions. While the future role of nuclear power is being clarified, significant potential remains to improve energy security through the diversification of the electricity sector with renewables and through energy efficiency.

Reenergising climate change policies

In 2009, Japan had announced its target to reduce greenhouse gas (GHG) emissions by 25% from 1990 levels by 2020. However, following the Fukushima accident and the subsequent closure of nuclear power facilities, the government under took a review of this target. At the UN Climate Conference COP19 in November 2013, Japan announced a revised target to reduce emissions by 3.8 percent compared to the 2005 level in 2020, without taking into account the emissions reduction by nuclear power. Adjusting to a base year of 1990, this new target translates to an increase of 3.1 percent in GHG emissions by 2020. However, Japan plans to review this target in line with the energy policy developments in the near future.

The dominance of fossil fuels, especially coal and gas, in the energy mix was the main driver of growing GHG emissions during most of the 2000s, and this has worsened with the reduced share of nuclear power after March 2011. In terms of policies to curb GHG emissions, important progress has been made with the introduction of the CO_2 Tax of Global Warming in October 2012. The initial price was quite low (90-100 yen or $1.2 per tCO_2), but the tax will be gradually increased by April 2016 (to 289 yen or $3.7 per tCO_2), generating 262.3 billion yen of tax revenue per year. This complements other recent developments, such as the emissions trading scheme (ETS) established in the Tokyo metropolitan area in 2010 (covering around 1,400 large emitters).

Eco-innovation and energy efficiency

Japan has improved energy efficiency by around 30% over the last 30 years, and total primary energy supply per GDP is one of the lowest in the world. Japan places a strong emphasis on "green innovation", promoting energy efficiency and low-carbon technology to secure a stable energy supply and address climate change. This approach is closely in line with the OECD *Green Growth Strategy*. Japan ranked second among OECD countries in 2010 in terms of its environment- and energy-related government R&D budget, along with a significant business R&D investment.

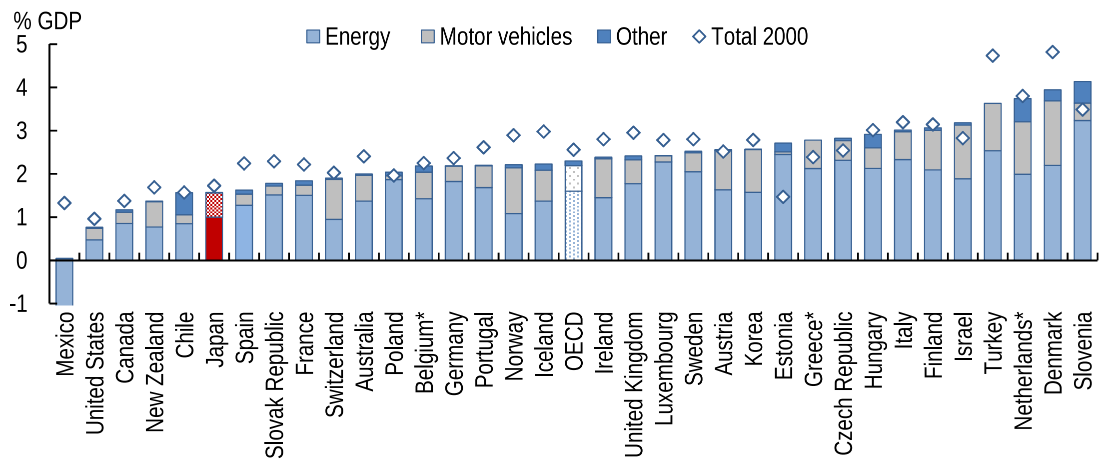
Eco-innovation has been driven by close collaboration between the government and the private sector. The government has deployed a range of measures to stimulate demand for green products, including green procurement, and an environmental technology verification programme. It has also established voluntary agreements with the business sector, such as the Top Runner programme, which sets dynamic energy efficiency targets for a range of products, from vehicles to household appliances. The programme has stimulated continuous improvements in fuel economy for vehicles and energy-efficient appliances in the residential sector. While the programme is promising, there is a need to ensure an independent evaluation of its success.

Extending energy taxes

Greening of the tax system would provide better incentives for fostering eco-innovation and enable Japan to efficiently reduce GHG emissions. Tax rates on energy products, including transport fuels, are among the lowest in the OECD and do not adequately reflect environmental and social costs. Revenues from environmentally related taxes have decreased slightly since 2000, in part because of lower energy intensity, and account for a lower share of GDP than in most other OECD countries (Figure 13). Increasing the tax rate and broadening its base could further help fiscal consolidation, while limiting the negative impact on output growth. The increase in the petroleum and coal tax rate (according to CO_2 emissions) in FY 2012 was a welcome step.

Figure 13. Revenues from environmentally related taxes

Percent of GDP, in 2000 and 2012



*2011 data

Note: 'OECD' figure refers to the simple average.

Source: *OECD/EEA database on instruments used for environmental policy.*

Untapped potential for renewable energy

Renewable energy provides around 13% of electricity in Japan, around 8% from hydropower, 3% from bioenergy and waste, and less than 1% each from wind, solar PV and geothermal. Their low operating costs mean that renewables have great potential to decrease reliance on LNG and other fossil fuels in the long term. This is especially the case as Japan is a world leader in the manufacturing of renewable energy technologies. But a number of barriers will need to be addressed.

In other OECD countries, the combination of a guaranteed price premium for renewable energy producers, a guaranteed market for producers and the independence of the scheme from the general budget have provided a predictable and credible long-term price signal to potential investors, thereby supporting the renewable sector development. Japan introduced a feed-in-tariff system in 2009, which became more widely operational in July 2012 to facilitate the development of renewable energy sources. The country also introduced longer-term targets for the renewables sector, in line with the recommendation in the 2010 OECD Enivronmental Performance Review.

Solar PV, in particular, has a high potential in Japan. It can be an important element in meeting summer peak demand and self-consumption from rooftop solar PV, in particular, could be well suited for land-constrained, industrial consumers. Very generous incentive levels since 2012 have led to a surge in solar PV capacity, making Japan the number two solar market worldwide after China in 2013. However, incentive reductions will be needed to manage electricity costs.

On the other hand, development in other renewable sources has been slower. Japan has relatively large potential for geothermal power, though drilling risks and environmental concerns mean that deployment will increase only slowly. While onshore wind is economically attractive and resources are good, mountainous geography and population density are challenges to large-scale projects. Accelerating wind developments, particularly in offshore wind, will require further cost reductions and improved integration measures through electricity sector reforms (Chapter 5), better inter-regional connections and further use and development of large-scale storage.

Key OECD recommendations

- **Analyse the effectiveness and dynamic efficiency of current energy performance targets** (e.g. the Top Runner Programme) in inducing eco-innovation and adjust as appropriate.
- Continue to **broaden the use of environmentally related taxes** and reduce incentives and subsidies that have perverse effects on growth and the environment.
- **Ensure a strong and consistent carbon pricing**, through carbon taxes and/or a mandatory emissions trading scheme. Consider increasing the 2012 carbon tax more rapidly, which will also help to achieve fiscal consolidation.
- **Establish a consistent and long-term policy framework for a greener energy supply,** increasing the importance of renewable energy sources. Japan also needs to clarify the future role of nuclear power and continue to reduce reliance on fossil fuels.

10. Investing in resilient cities

Japan has the highest concentration of population in metropolitan areas in the OECD. 70% of the population live in urban areas and the same percentage of GDP is generated there. As such, cities play a dominant role in national economic and environmental performance. Despite the diversity of its cities, from the large metropolitan regions down to small and medium sized cities, Japan has been successful in establishing a clear national urban policy framework to identify the urban challenges and encourage each city to take further steps for resilience and sustainable development. To enhance the benefit of urban agglomeration, Japan should elevate the co-ordination among actors and levels of government and increase private-sector participation in urban development.

Compact urban development can help cope with Japan's ageing population and environmental challenges

Japan is the leading country in compact city strategies. Such strategies, characterised by comprehensive policies to favour high-density development, mixed land use and smarter public transport can improve the living conditions of a growing elderly population. They can also help address negative externalities for the environment, such as CO_2 emissions, waste, and multiple forms of pollution. In order to increase the effectiveness of compact urban development, it is necessary to improve their coordination across the country and involve further the private sector.

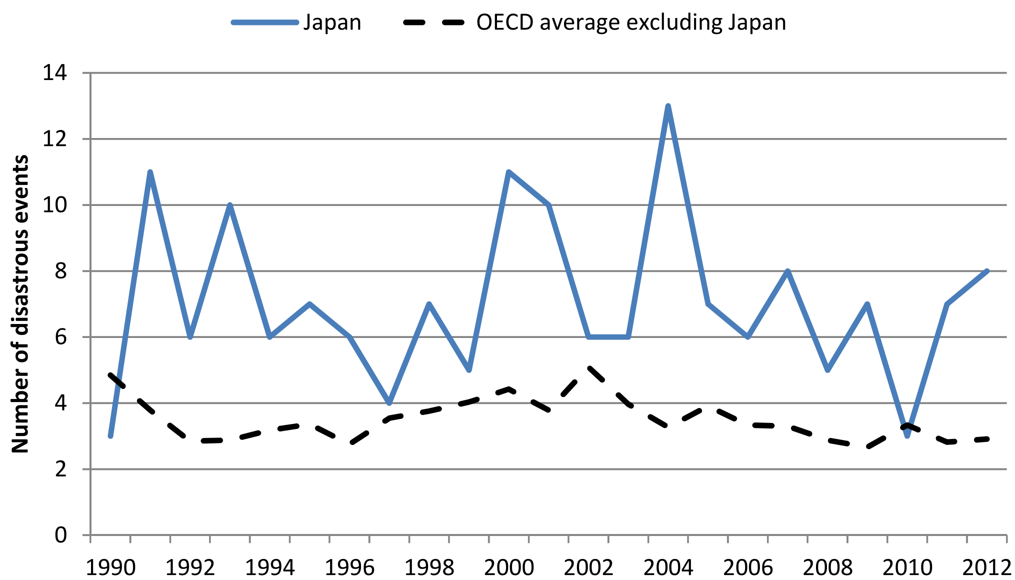
Investing in resilient cities is critical

During the past decades, Japan has experienced twice as many disasters annually compared to the OECD average (Figure 14). The average economic losses from disastrous events have been significantly above the OECD average, due to some major catastrophic events. For example the Great East Japan Earthquake resulted in an estimated USD 200 billion in economic damages alone. Japan's particular topography, geography and climate make it subject to frequent earthquakes, typhoons, floods and landslides. Investing in the resilience of urban areas should thus be a priority. In urban areas, complex transport and critical infrastructure systems create inter-dependencies, which tend to amplify the impact of disasters, with cascading effects.

Learning from disasters and investing in post-disaster management to increase resilience has been a policy priority in Japan. Japan has developed sophisticated expertise in dealing with natural disasters, and it is well renowned for its protective infrastructure engineering, hazard warning systems and communication technologies. However, there could be areas for further investment to confront the changing risk landscape, such as ensuring that all schools are reinforced to withstand earthquakes.

The presence of interconnected risks also requires cross-sectoral and whole-of-society engagement and collaboration, under clear national leadership, taking advantage from the specific expertise of specialised agencies. Finally, increased attention has to be paid to understanding the vulnerabilities existing in major international supply chain networks, with attention to redundancy and reserve capacity issues. Taking action now can bring significant benefits in the future, as it can help cut the chain of cascading impacts in the event of a disaster, thereby reducing damage and facilitating recovery.

Figure 14. Annual number of disasters in Japan compared to the OECD average



Source: EM-DAT

Key Recommendations

- **National urban policies** should be developed to facilitate cooperation across policy sectors, private sector, and local governments.
- **Compact city policies should be pursued by cities of all sizes**. The national government has an important role to play in putting them into the core of urban policies. Comprehensive policy packages, including land use, transport, housing, public services, employment and energy, need to be coordinated, to reflect the unique urban context of each city.
- **Investment in urban infrastructure needs to be reviewed** in order to take into account the changing demand due to depopulation, life-cycle management of infrastructure and the introduction of ICT for efficient operation. Coordination across governments and policy areas should be a key principle of public investment.
- Japan needs to further develop a **national strategy for a whole-of-society approach to critical risks**, assigning leadership at the national level, connecting policy agendas and aligning competing priorities across ministries and between central and local government to address the complex needs of major metropolitan areas.
- Japan should also **further partnerships with the private sector to promote responsiveness and shared responsibilities**, deepen information sharing and invest in the necessary infrastructures for resilient cities.
- Japanese expertise in developing and managing cities needs to **contribute to emerging cities in Asian countries**. This requires policies to support knowledge sharing and mutual learning among cities, national governments and implementation partners in Asian countries.

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