

## Innovation for an ageing society

### Rationale and objectives

The continuing increase in life expectancy represents a remarkable achievement of humankind, but it raises significant questions about how it will affect countries' economies, and the viability of health and social security systems. Across OECD countries, population ageing is the result of declining fertility rates, reductions in child mortality rates and an increase in longevity, which altogether can lead to significant increases in the share of older people in the total population (see Chapter 1 on "Megatrends for STI").

According to the most recent estimates, the share of individuals above 65 years globally will almost double by 2050, rising from 8.2% at present to 15.6% in 2050. OECD countries will experience less strong growth, as they start from a higher baseline. In 2050, people above 65 will constitute more than a quarter of the overall world population (25.3%), well above the current share of 16.4%. Similarly, the share of individuals above 80 years of age will more than double, both worldwide (from 2.0% to 4.8%) and in OECD countries (from 4.4% to 9.5%), while the share of people below 15 years old will experience a smaller decrease (from 26.0% to 21.3% worldwide, and from 18% to 15.8% in OECD countries). Overall, by 2025 there will be more people over 60 than below 14 (Paccagnella, 2016).

Governments in many countries are increasingly aware of the need to anticipate the challenges arising from an ageing population in a strategic manner, to ensure countries' fiscal sustainability and a more efficient provision of health care services.

At the same time, a paradigm shift in framing the policy issues is needed. Although life-spans have significantly increased over the past century, ideas of what it means to age have not kept pace. A new outlook on ageing population as driver for innovation and economic growth must replace the image of older people as a burden for productivity and cause of public spending increases. Older people's untapped potential must be leveraged to build a flourishing silver economy where innovative enterprises, new markets and services are created by and for older people.

### Major aspects and instruments

With demographic shift, the age structure and the size of the working population of countries will change radically in the coming decades. The issue of older people's participation in the labour market has thus become a policy priority for most OECD countries as there is growing recognition that older workers are increasingly critical to the overall economy.

Most countries have already worked towards expanding older people's working lives along two main lines through change in labour market institutions and through change in pension systems. More recently, countries have started to recognize the importance of social and technological innovation in anticipating the needs of their ageing societies.

In particular, where flexible work combines with technological innovation, as in the case of online platform markets, new technology-enabled forms of work may help older workers engage in economic activities in a new way, while specific programmes may encourage senior entrepreneurship. A number of social innovations across OECD countries are creating the conditions for an extended work life by helping older people apply their skills beyond retirement. As an illustration, the Happy Senior Project in South Korea and Encore Careers in the US both support the over 50s or early retirees to develop future roles in NGOs. In the UK, NEDexchange helps companies find non-executive directors from retired professionals. SCORE (Service Corps of Retired Executives) is an American mentoring programme that matches retired business professionals with young small business owners. Social entrepreneurship may also help older people remain



active. Senior Entrepreneurship Works, for example, helps the over 50 entrepreneurs find capital and for their business ventures.

A technology-driven silver economy ecosystem is also emerging to support the unique requirements of the ageing. Physical and mental deterioration among the oldest cohorts create demand for new products and services and offer opportunities for innovators to respond to unmet needs. Examples of products specifically designed for the silver market include new smart phones responsive to the safety and operational preferences as well as the visual and hearing needs of the elderly population. Moreover, cutting-edge wearable technologies may assist people with Parkinson's and other neurodegenerative diseases such as Alzheimer's disease to remind patients the path to the grocery store or of their family and friends' names. Other technologies applied to the footwear and apparel industry may reduce the impact of falls or monitor cardiovascular health.

Innovation in health care services delivery is also expected to address the increased health needs and rising costs of ageing populations. In most OECD countries there is a broad consensus that a more intense use of digital technologies can improve the efficiency and quality of care through smarter models of care that allow a range of new and more efficient ways of delivering home care services to old people, and increase their autonomy and empowerment (OECD, 2013). New digital technologies are enabling a paradigm shift towards more participatory, predictive, personalised and preventive care (Hood and Friend, 2011).

The Internet of Things (IoT) opens up a host of new opportunities to build and deliver tools, services and platforms that will keep people connected socially, feel safe and live independently as they age. By allowing more detailed self-monitoring, IoT's promise is to increase personal autonomy, while also providing reassurance to carers and relatives. At the same time, a significant amount of data will be generated by the IoT devices which will be communicated to back-end systems managed by the IoT service providers.

Connected devices generate a plethora of data which can inform strategic decisions in addressing daily life challenges facing ageing populations such as loneliness, falls, and can be critical for chronic disease management, and for the prevention of hospital readmissions. Data acquisition and analysis can inform environmental monitoring systems and provide customised, real-time intelligence and alerts for families, doctors and caregivers. In this general scenario, with multiple technology choices and possible business models it will be necessary to manage the risks associated with privacy and security. To this end, a wide range of stakeholders will have to learn to work closely with ICT security and privacy experts, and with manufacturers and developers.

## Recent policy trends

Governments have funded broad research initiatives to assess the impact of ageing on their economies and societies. In particular, some European countries have participated in the EU funded Joint Programming Initiative "More Years Better Lives" (MYBL) to establish a common research framework and coordination of research across Europe on ageing. The research spans across a number of policy domains including sciences, health, care, welfare state, education, urban and regional development and mobility.

In Germany, the Ministry for Education and Research (BMBF) adopted in 2015 the "Bringing technology to the people" research programme on human-machine interaction (HMI). The programme is based on the guiding principle of a 'cooperative', user-oriented, needs-based technology that respects human dignity - for the benefit and well-being of all generations. Similar research objectives have been pursued in Lithuania with the adoption of the National Research Programme "Healthy ageing". The Programme aims for an integrated analysis of the biological and social determinants of healthy ageing through the development of new evaluation methods for disease risk factors and the early detection of diseases through the use of bio, nano and digital technologies.

In an effort to respond to the challenges of an ageing population and build the basis for a thriving Silver Economy, France set up in 2013 a specific government strategy to support public and private innovation in the field. The strategy comprises the creation of a web portal to inform on available services for elderly care, the introduction of voluntary norms and quality labels for Silver Economy goods and service providers, the creation of an ad-hoc sectorial investment fund (SISA) and of an international competition on business ideas for the Silver Economy together with broader business support services for firms engaged in the sector.

Subnational governments across OECD countries have adopted a host of health care related innovations. The region of Southern Denmark for example is focusing on telemedicine to improve care and cut costs. Through a number of initiatives, the region is providing homecare devices, collecting data and monitoring the care needs of patients at home, with the goal of building integrated care systems that enable patients to remain in their homes as long as possible. Similarly, the city of Oulu, Finland is supporting independent





living and home care using technological products and services including an individual wellness profile with approximately 28 300 registered users.

Integrated systems of health information are also increasingly adopted at subnational level. To illustrate, the Spanish Government initiative on the Digital Health Record of the National Health System (Historia Clínica Digital del Sistema Nacional de Salud (HCDSNS)) focuses on increasing the coordination of health and social cares through electronic integration of health information, providing access to physicians and patients. Similarly, in Chinese Taipei, the Taipei Citizen TeleCare Service (CTCS) system combines the city's resources in the areas of healthcare, social welfare, and information and communication technology. CTCS performs a number of health monitoring functions including biometric measurement, hypertension risk assessment as well as clinic appointment service, video communication support for health needs and health/hygiene education programs.

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