REG: Strengthening Developing Member Countries’ Capacity in Elderly Care
Projection of Long-Term Care Demand and Expenditure in the Indonesian Older Population: Implications for Long-Term Care Financing

Prepared by: Bo Hu and Iis Sinsin
For Asian Development Bank

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Executive Summary

This study makes projections of demand for long-term care and expenditure of formal care from 2015 to 2040 in Indonesia. The projections were produced using the macrosimulation approach (PSSRU model). The projections cover informal care and formal care for older people aged 60 and over. The key findings are as follows:

- The number of older people receiving informal care in Indonesia is projected to rise from 5.4 million in 2015 to 15.3 million in 2040, an increase of 183%, under the base case assumptions.
- The number of informal care recipients is projected to increase by 141%, 193% and 241% by 2040 for older people aged 60-69, 70-79 and 80+, respectively.
- The proportional increase in demand for informal care does not differ greatly by gender.
- It is projected that the demand for care from children will increase faster than demand for care from a spouse or from other relatives due to population ageing.
- It is projected that the demand for 30+ hours of informal will increase faster than demand for 1-10 hours of care or 10-30 hours of care due to population ageing.
- The number of older people receiving formal care is projected to rise from 302 thousand in 2015 to 878 thousand in 2040, an increase of 191%.
- The expenditure of formal care is estimated to be 1.7 trillion Rupiah in 2015, rising to 5.1 trillion Rupiah in 2040.
- The projection results are highly sensitive to alternative assumptions about future prevalence rates of disability but less sensitive to the assumption about future patterns of marital status and living arrangements.
- In the next step, it would be useful to conduct research on the future supply of long-term care, the economic consequences of formal and informal caregiving, incentivisation of local governments in resource commitment, and policy innovation of long-term care financing.
- There are multiple options to the financing of long-term care. For the Indonesian government, it is important that the decisions take into account the projected demand for long-term care and future supply of informal caregivers.

These findings should be treated with caution. They are based on a set of assumptions about future socioeconomic and demographic trends. The analyses do not take account of future increase in the capacity of formal care provision or government support. The number of older people receiving formal care or reporting information on care expenditure is small.
Introduction

Long-term care is crucial to older people who experience increasing difficulties in carrying out basic but much valued daily activities in later life. According to the World Health Organisation (2015), long-term care (LTC) refers to “the activities undertaken by others to ensure that people with or at risk of a significant ongoing loss of intrinsic capacity can maintain a level of functional ability consistent with their basic rights, fundamental freedoms, and human dignity.” Unlike healthcare which aims to cure a disease, help patients recover from an illness or prevent the progression of an illness, long-term care aims to make an older person's disabled state of life more bearable by compensating for older people’s loss of or decline of functional capability (Hu and Li 2018). In many high-income countries, formal care provided by professional caregivers and informal care provided by family members join forces to meet older people’s care needs. In Indonesia, an overwhelming majority of the caregiving responsibilities are taken by informal caregivers, whereas formal care barely exists.

Long-term care policy in Indonesia is at a turning point. It is estimated that there are 21.6 million older people aged 60 and over across the country, account for 8.2% of the total population (United Nations 2019). Compared to many high-income countries, Indonesia has a less aged population. However, the demographic characteristics of the population are changing rapidly. Both fertility and mortality have been declining and are expected to remain so in the decades to come. It is projected that the proportion of older people will increase to 19.2% by 2050. Given that Indonesia has the fourth-largest population in the world, rapid population ageing will ultimately translate into a surge in demand for long-term care. Meanwhile, the past decade has witnessed sustained economic development in Indonesia. Owing to industrialisation and urbanisation, household structure and living arrangements have also changed considerably, with more older people living alone or living with their spouse only, which will result in increasingly restricted access to long-term care provided by family members. In the context of population ageing, it is important to build a long-term care system that is sustainable, affordable and equitable. The achievement of this objective merits a systematic and thorough understanding of older people’s future care needs of, and demand for long-term care resources in the first step.

This study makes projections of long-term care demand and expenditure of formal care from 2015 to 2040 in Indonesia. The rest of the report is organised as follows: we first describe the data and methods used to make projections. This is followed by a detailed description of the analysis results. We will focus on the pattern of receiving informal care, projected demand for informal care in the base case and alternative scenarios, and projected expenditure of formal care. In the last two sections, we discuss the implications of the projection results and future directions of research and policy development.
Research methods

Data

The data in the analysis mainly come from the Indonesia Family Life Survey (IFLS), an ongoing longitudinal survey with a sample representative of 83% of the Indonesian population. The first wave of the IFLS was conducted in 1993/1994, with four follow-surveys conducted in 1997, 2000, 2007 and 2014, respectively. Our analysis is based on the fifth wave of the IFLS data (i.e. IFLS 2014). IFLS 2014 collected health and ageing-related information from 3,976 Indonesian older people aged 60 and over, which is the focus of our analysis.

Apart from the IFLS 2014 data, we use data of projected population in Indonesia by age groups and gender published by the United Nations (2019) as the basis of projections of long-term care demand and expenditure. We use data in the SUPAS 2015 to triangulate our results of analyses regarding population structure and magnitude of care needs (Adioetomo and Djarir 2018). This is to ensure that the demographic characteristics in our projection model are consistent with those reported in the national statistics.

Measurements and drivers of long-term care receipt

Functional limitation or disability is the most important driver of long-term care use. The IFLS asked survey participants whether they can perform five activities of daily living (ADLs; dressing, getting in and out of bed, continence, and bathing) or instrumental activities of daily living (IADLs; shopping for personal needs, shopping for groceries, cooking, taking medication, and doing housework). For each ADL or IADL task, older people’s functional capability was measured on a four-point scale: 1 = easily, 2 = with difficulty, 3 = can do with help, and 4 = unable to do it. An older person was identified as having an ADL/IADL limitation if the person’s answer to the ADL/IADL question is 3 or 4. On the basis of this, we created a disability variable with four categories: no ADL or IADL disability (independent), IADL limitation only or difficulty with ADL tasks (mild disability), one ADL limitation (moderate disability), and two or more ADL limitations (severe disability). Following such a method, we estimate that 27% of Indonesian older people have a functional disability and thus need long-term care. If we exclude those reporting ADL difficulties in the measurement of disability, we estimate that 30% of older people have care needs. This figure is very close to the prevalence of care needs reported in a recent diagnostic study published by the Asian Development Bank (Adioetomo and Djarir 2018). We included ADL difficulties reported in the IFLS survey as a functional disability for two reasons. First, such a method is consistent with that used in the previous studies, so that the findings in this report will be comparable with those in the existing literature on countries (Wittenberg, Hu et al. 2018, Hu 2019). Second, the IFLS data show that a large proportion of older people with ADL difficulties only do receive informal or formal care.

The IFLS asked survey participants to name three persons who often assist them with ADL or IADL tasks. Participants can choose from family members (including spouse, children, parents, siblings, grandchildren, uncle/aunt, cousin or other relatives) or people from outside the family (including servants and unspecified other people from outside the family). Family members are defined by the kinships. They do not necessarily live with care recipients in the same household. Those who reported receiving care from family members are considered in this study as informal care recipients, and those who reported receiving care from servants or unspecified others from outside the family are considered as formal care recipients. Informal care recipients are further divided into three groups: receiving care from a spouse (spouse care), receiving care from children but not from a spouse (children care), and receiving care from other family members only (care from others). For informal and formal care recipients, they were further asked how many hours of care they had received in the last month from
caregivers. We calculate the total hours of care people receive each week and divide informal care recipients into three groups according to the weekly hours of care: 1-10 hours (low care intensity), 10-30 hours (medium care intensity), and 30+ hours (high care intensity).

Based on the behavioural model of care utilisation, five factors which are hypothesised to be strongly associated with care receipt are investigated in the analysis. They include age, gender, marital status, living arrangements, and education. The age variable has five categories: 60-64, 65-69, 70-74, 75-79, and 80+. The marital status and living arrangements are combined into one variable with four categories: single older people living alone, single older people living with other people, married couples living alone, and married couples living with other people. Single older people refer to those who have never been married or those who are widowed, separated or divorced. The education variable has three categories: no formal education, primary education, and secondary education or above.

**Building the projection model**

The macrosimulation approach is used to make projections of long-term care (LTC) for older people in Indonesia. Macrosimulation is a well-established model approach and has been used in LTC research in the UK (Wittenberg, Hu et al. 2018), Hong Kong (Chung, Tin et al. 2009), mainland China (Hu 2019) and OECD countries (Colombo, Llena-Nozal et al. 2011). The model consists of three parts. In the first part, regression analysis is conducted to confirm the correlation between the drivers (i.e. age, gender, disability, marital status and living arrangements, and education) and the receipt of long-term care and to calculate the probability of care receipt. The model then divides the older population into small groups according to these drivers of long-term care receipt. The second part multiplies the number of people in each small group by the probability of using care. Aggregating the number of care users generates the total demand for informal and formal care. The final part attaches unit costs to the number of care recipients to calculate the total expenditure of formal care and the opportunity of informal care, where applicable. We treat the year 2015 as the base year of the model and make projections until 2040. We applied the projected number of older people by age group and gender reported by the United Nations to calculate the demand for informal care and the expenditure of formal care in the projection years. The base case projections are based on a number of assumptions:

- Prevalence rates of disability by age group and gender remain constant in the projection years
- The proportion of married older people and pattern of living arrangements by age group, gender and disability remain constant in the projection years.
- Supply of informal care always keeps up with the demand for informal care.
- Level of education of older people remains unchanged in the projection years.
- There is no change in the capacity of formal care provision.
- There is no real increase in the unit costs of formal care in the projection years.

These assumptions can be relaxed or altered to test the sensitivity of the projection results in the base case or investigate the impact of policy reforms.
Research findings

Probability of receiving informal care in the base year of 2015

Regression analysis of the IFLS wave 5 shows that all of the factors described in the previous section are significantly associated with the receipt of informal care. People in higher age groups are more likely than those in the lower age groups to receive informal care. Males are more likely than females to receive informal care. More severe disability is associated with a higher likelihood of receiving informal care. For older people with any level of disability, their probability of receiving informal care is 0.72. For older people with mild, moderate and severe disability, the probability of receiving informal care is 0.68, 0.74, and 0.93, respectively (Figure 1). Married older people and those who live with other family members in the same household are more likely to receive informal care. Older people with primary education or above are less likely than those without formal education to receive informal care and are more likely to receive formal care.

For informal care recipients, those in the higher age groups and females are more likely to receive informal care from children or other family members rather than receive care from a spouse. Informal care recipients in the higher age groups, with more severe disability, and living with others are more likely to receive 10-30 or 30+ hours of informal care per week rather than receive 1-10 hours of care. Older people in the higher age groups are more likely than those in the lower age groups to receive formal care. Those with primary education or above are more likely than those without formal care to receive formal care.

Figure 1. Projection of Long-Term Care Demand and Expenditure in the Indonesian Older Population: Implications for Long-Term Care Financing

<table>
<thead>
<tr>
<th>Mild disability</th>
<th>Moderate disability</th>
<th>Severe disability</th>
<th>People with disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.68</td>
<td>0.74</td>
<td>0.93</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Receiving informal care  Not receiving informal care
Probability of receiving informal care according to severity of disability in 2015

Projections of long-term care demand and expenditure: Base case scenario

According to the population projections reported by the UN, the number of older people aged 60 and over in Indonesia will increase by 162%, from 21.9 million in 2015 to 57.4 million in 2040 (Table 1). The number of people in very advanced old age, namely people aged 80 and over, is projected to increase by 243%, much faster than the increase in the overall older population. We estimate that in the base year of 2015 there are 5.9 million older people with mild disability, 0.84 million people with moderate disability and 0.79 million with severe disability. We assume in the base case scenario that prevalence rates of mild, moderate and severe disability by the five age groups and gender will remain the same in the following decades. Based on this assumption, we project that the number of Indonesian older people with mild, moderate and severe disability will increase 175%, 183% and 192%, respectively, by 2040.

Table 1. Projected number of older people with care needs in Indonesia, 2015-2040 (million people)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>% Growth 2015-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>60+</td>
<td>21.9</td>
<td>27.5</td>
<td>34.2</td>
<td>41.8</td>
<td>49.7</td>
<td>57.4</td>
<td>162.2%</td>
</tr>
<tr>
<td>80+</td>
<td>1.9</td>
<td>2.4</td>
<td>2.9</td>
<td>3.6</td>
<td>4.7</td>
<td>6.5</td>
<td>242.9%</td>
</tr>
<tr>
<td>Mild disability</td>
<td>5.9</td>
<td>7.4</td>
<td>9.2</td>
<td>11.3</td>
<td>13.8</td>
<td>16.4</td>
<td>175.3%</td>
</tr>
<tr>
<td>Moderate disability</td>
<td>0.84</td>
<td>1.05</td>
<td>1.30</td>
<td>1.61</td>
<td>1.99</td>
<td>2.39</td>
<td>182.7%</td>
</tr>
<tr>
<td>Severe disability</td>
<td>0.79</td>
<td>0.98</td>
<td>1.20</td>
<td>1.51</td>
<td>1.88</td>
<td>2.32</td>
<td>192.3%</td>
</tr>
</tbody>
</table>

Based on the analysis of IFLS wave 5 data, we estimate that there were 5.4 million older people in Indonesia receiving informal care from family members in 2015, among whom 1.2 million received care from a spouse, 3.5 million received care from children, and 0.7 million from other family members only. The macrosimulation model projects that the number of informal care recipients will increase to 15.3 million in 2040, an increase of 183% (Table 2). Future demand for informal care is projected to increase markedly with age. The number of informal care recipients is projected to increase by 141%, 193% and 241% by 2040 for older people aged 60-69, 70-79 and 80+, respectively. Meanwhile, the proportional increase in demand for informal care will not differ greatly by gender. The number of male care recipients is projected to increase from 2.1 million in 2015 to 5.8 million in 2040, an increase of 183.5%, whereas the number of female care recipients is projected to increase from 3.4 million in 2015 to 9.5 million in 2040, an increase of 182.8% (Table 2).

Demand for care from children is projected to increase the fastest among the three sources of informal care. As mentioned above, people are more likely to receive care from children rather than from spouse as they reach very old age. Meanwhile, we expect a faster increase in the oldest old population in Indonesia (Table 1), which will drive up the demand for care from children. Among the 5.4 million informal care recipients in 2015, 2.4 million people received 1-10 hours of care, 1.9 million people received 10-30 hours of care, and 1.1 million people received 30+ hours of care. We project that the number of people receiving 30+ will reach 3.4 million in 2040, an increase of 184%. Since people in the higher age groups are more likely to
receive more hours of care (see above), people in the group of 30+ hours of care will increase faster than those in the other two groups.

Table 2. Projected number of informal care recipients according to age and gender, 2015-2040 (million people)

<table>
<thead>
<tr>
<th>Disaggregation by age group</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>% Growth 2015-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-69</td>
<td>2.1</td>
<td>2.7</td>
<td>3.4</td>
<td>4.0</td>
<td>4.6</td>
<td>5.1</td>
<td>140.8%</td>
</tr>
<tr>
<td>70-79</td>
<td>2.2</td>
<td>2.5</td>
<td>3.1</td>
<td>4.1</td>
<td>5.3</td>
<td>6.3</td>
<td>192.8%</td>
</tr>
<tr>
<td>80+</td>
<td>1.2</td>
<td>1.5</td>
<td>1.8</td>
<td>2.2</td>
<td>2.9</td>
<td>4.0</td>
<td>241.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disaggregation by gender</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>% Growth 2015-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2.1</td>
<td>2.6</td>
<td>3.2</td>
<td>4.0</td>
<td>4.9</td>
<td>5.8</td>
<td>183.5%</td>
</tr>
<tr>
<td>Female</td>
<td>3.4</td>
<td>4.1</td>
<td>5.1</td>
<td>6.3</td>
<td>7.8</td>
<td>9.5</td>
<td>182.8%</td>
</tr>
</tbody>
</table>

Total number of care recipients | 5.4 | 6.7 | 8.3 | 10.3 | 12.7 | 15.3 | 183.1%    |

Note: Figures may not add exactly due to rounding.

Figure 2. Projected number of older people receiving informal care according to sources of care, 2015-2040 (million people)

An analysis of the IFLS 2014 data shows that 4.1% (N=60) of older people with care needs receive formal care. On the basis of this, we estimate that there were 302 thousand older people receiving paid care in 2015, which represents 1.38% of the Indonesian older population (Figure 1). We project that the number of formal care recipients will rise to 878 thousand in 2040, an increase of 191%. Among the 60 people receiving formal care, 46 provided information on the amount of money they spent to pay for formal care. There are enormous
variations in terms of people’s expenditure on formal care. At one extreme there are four persons spending less than 10,000 Rupiah per month, whereas at the other extreme there are five persons spending more than 1.5 million Rupiah per month. These variations reflect the great diversity across the country in terms of economic structure, care resource availability and service affordability. On average, a formal care recipient spent 482,800 Rupiah per month on care services. Multiplying the monthly expenditure by 52.14, we estimate that a formal care recipient spent 5.8 million Rupiah in 2015, and the total expenditure on formal care amounts to 1.7 trillion Rupiah per year at 2015 prices (i.e. 5.8 million Rupiah multiplied by 302 thousand people). We project that the total expenditure on formal care will increase to 5.1 trillion Rupiah in 2040.

Figure 3. Projected number of older people receiving informal care according to care intensity, 2015-2040 (million people)

Figure 4. Projected number of older people receiving formal care in Indonesia, 2015-2040 (thousand people)
**Sensitivity analysis**

Prevalence rates of disability by age group and gender in the older population are assumed to be constant in the projection years. There is scope to argue whether this continues to be the case. On the one hand, advances in health technology help older people with serious illness and severe disability to survive longer. This means that while older people’s life expectancy increases, they spend most of the additional years in their life with a disability, which translates into increased prevalence rates of disability. To capture the impact of this scenario, we assume that the prevalence rates of mild, moderate and severe disability by age group and gender increase by 0.5% (not percentage point) each year until 2040. On the other hand, healthy lifestyle in mid-life and healthy ageing programmes help reduce the risk factors of disability, which means that while older people’s life expectancy increases, they also enjoy more years of life without disability. This may lead to a scenario of decreased prevalence rates of disability. To capture the impact of this scenario, we assume that the prevalence rates of mild, moderate and severe disability by age group and gender decrease by 0.5% (not percentage point) each year until 2040.

Figure 5 shows the projection results based on the alternative assumptions of future disability trends. In the scenario of increased prevalence of disability, we project that the number of older people receiving informal care will increase from 5.4 million in 2015 to 17.4 million in 2040, as opposed to 15.3 million in the base case. In the scenario of decreased prevalence rates of disability, we project that the number of older people receiving informal care will increase to 13.4 million in 2040, as opposed to 15.3 million in the base case.

**Figure 5. Projected number of people receiving informal care by 2040 under alternative assumptions of future prevalence rates of disability (million people)**
Due to a continued decrease in fertility rate in Indonesia, we expect that Indonesian older people will have fewer children on average in the future. Meanwhile, with the industrialisation and urbanisation of the country, the family structure will also change. We expect fewer working-age adults will live with their parents. As a result, singleton households where only one older person lives alone are expected to become more common. To capture such this trend, we model a scenario of an increased proportion of single older people living alone. According to the IFLS 2014 data, the proportion of single older males living alone stands at 4.7%, whereas the proportion of older females is 13.9%. We assume that by 2040 the proportion of older people living alone will increase to 12% for men and 18% for women, respectively. Under such an assumption, we project that the number of older people receiving informal care will increase from 5.4 million in 2015 to 15.1 million in 2040. Given that demand for informal care will be 15.3 million people in 2040 under the base case scenario, this means that increased proportion of singleton household will create a care gap of 283,000 people (figure 6).
Discussion

Future demand for informal care

This study made projections of future demand for, and expenditure of long-term care in the Indonesian older population. We projected in the base case that the demand for informal care will increase faster than the number of older people aged 60 and over. This is attributable to a faster increase in the proportion of older people in the higher age groups who have a higher probability of needing informal care. For this same reason, the pressure of demand for informal care will be uneven for different groups of older people. It is projected that there will be a higher demand for informal care provided by children and for high-intensity care (30+ hours per week). These base case projection results are sensitive to alternative assumptions about future trends of disability. If we assume an increase of 0.5% in the prevalence rate of disability each year, demand for informal care by 2040 is projected to be 2.0 million people larger in this scenario than that in the base case. If we assume a decrease of 0.5% in the prevalence rate of disability each year, demand for informal care by 2040 is projected to be 1.8 million people smaller in this scenario than that in the base case.

Unmet needs and supply of long-term care

It is assumed in the base case that the proportion of single older people living alone in the older population remain unchanged in the projection years. If this proportion increases to 12% for men and 18% for women, we project that this will create a care gap of 280,000 people by 2040. It seems that the projected demand for informal care is not highly sensitive to future changes in marital status and living arrangements.

However, it must be recognised that such a finding relies on another key assumption in the base case: the supply of informal care can keep up with demand. Indeed, a reduction in the number of work-age adults and consequently a decrease in the supply of informal care is a major threat to the sustainability of a country’s long-term care system in its process of population ageing. The United Nations projected that work-age adults in Indonesia will increase by only 20% between 2015-2040, far lower than the increase in the older population in the same period which is 164%. This means that for each older person with care needs, there will be fewer informal caregivers available. To keep up with the demand for informal care, each caregiver will have to devote more hours each day to care provision. Otherwise, there will be more people with unmet care needs. However, increased supply of informal care will crowd out the time caregivers have for other activities such as employment or taking a rest, leading to serious consequences for their economic opportunities and health in the long run.

Projections of long-term care expenditure

The formal long-term care sector in Indonesia is still in its early stage of development. At present, only around 1% of older people living at home receive formal care. However, given the size of the population in Indonesia, the number of formal care recipients is large: we estimate that 302,000 older people are receiving formal care, and the number will nearly treble by 2040. The expenditure on formal care is estimated to be 1.7 trillion Rupiah in 2015. One caveat must be stressed here. The estimated expenditure of formal care is based on information reported by a very small number of people in the IFLS 2014. Therefore, these are only indicative results and extreme caution must be taken to interpret these results. An analysis based on larger samples and more detailed information on the unit cost of formal care will be essential for us to understand better the economic consequences of formal care provision in the context of population ageing in Indonesia.
Estimates of formal care receipt and expenditure are based on the assumption of the unchanged capacity of formal care provision. If the supply of formal care increased in the following decades, we expect that the expenditure of formal care service would be higher than the expenditure reported in the base case scenario. The projection model used in this study can be expanded to simulate the financial consequences of reforms to the long-term care system. On the basis of the model, researchers can make assumptions about the need-based eligibility criteria for government support and accordingly calculate the number of older people who will be eligible to receive formal care services (including community-based care and care home services) funded by the government. Multiplying the number of publicly-funded formal care recipients by the unit costs of formal care will lead to the total public expenditure of formal care services in the projection years. Experimenting with alternative assumptions in the model, researchers will be able to specify how the total expenditure of formal care will change with different eligibility criteria.
Implications for next steps

Research agenda

The analysis in this study provides a clear indication that, as population ageing in Indonesia continues to accelerate, it would be increasingly difficult for informal caregivers alone to sustain the long-term care system. Without support from the government, there is an elevating risk of unmet/undermet needs in the older population and exhaustion of human resources among caregivers. Projection modelling which focuses on the supply side will provide further insight into the sustainability of the long-term care system in Indonesia. Like the projection model of long-term care demand, a supply-side projection model also requires individual-level data and consists of three parts. The key information for this model includes the characteristics of informal caregivers (e.g. such as age, gender, marital status, education, occupation, and the number of underage children), the number of care hours provided to care recipients, and the relationship of caregivers to care recipients.

The supply-side model first calculates the probability of a caregiver providing care according to his/her characteristics. It then estimates the number of caregivers and the number of care hours that will be available to older people with care needs. By comparing the projected demand for and supply of informal care, researchers will be able to estimate the unfulfilled care demand or the care gap in the older population. By altering the key assumptions (e.g. the probability of caregiving or the number of care hours provided to care recipients), researchers will be able to project how many additional informal or formal caregivers or how many more hours of care will be needed to meet the care demand.

In this study, we only estimated the expenditure of formal care services. As an overwhelming majority of older people in Indonesian are still receiving informal care, it is important to consider the cost implications of informal care. Costing informal care is notoriously difficult. There are two commonly used approaches: the replacement cost approach and the opportunity cost approach (Wimo, Jönsson et al. 2013). The replacement cost approach assumes that the cost of informal caregivers’ input can be calculated by using the input of formal caregivers. Researchers adopting this approach face the same challenges as we do when we estimate the formal care expenditure. A large and random sample with accurate formal care costs data is a key pre-requisite for taking this approach. The opportunity cost approach is even more controversial than the replacement cost approach. For work-age adults, researchers can estimate the costs of informal caregivers by calculating the production loss resulting from the absence of work. For retired caregivers, the choice of opportunity costs may become arbitrary as there is no comparable information on their labour costs. One way to reduce the arbitrariness in costing informal care is to combine the two approaches. This requires more detailed information with regard to caregivers’ time spent on different caregiving activities and the severity of disability of people whom they care for (Wittenberg, Knapp et al. 2019).

The analysis in this study, together with further research on care provision, unmet needs and cost of informal care, will all contribute to the understanding of the level of resources needed for the long-term care system. The research findings will indicate the financial commitment of the local and central governments of Indonesia. There are multiple approaches to long-term care financing (see below). Policy design is undoubtedly a central issue. Meanwhile, how to make sure the policy is implemented according to its design is an important research programme in its own right. A recurring theme that emerges from the conversation with government officials is that there is insufficient political will at the local level to provide funding for the existing long-term care policies. Therefore, intensive research on the policy goals,
incentives, responsibility devolution and decision-making of local governments will be equally valuable if we want to make sure that LTC policies can be successfully implemented. A better understanding of inter-governmental co-ordination and more resources spent on policy innovation will play a significant role in making sure that the policies are best suited to the Indonesian context.

**Policy implications**

Given the continued increase in demand for care and the looming care gap in the older population, the development of a formal care sector that shares the care responsibilities with informal caregivers seems indispensable in the next step. The economic consequences of capacity expansion to some extent can be informed by the demand-side and the supply-side models discussed above. Apart from capacity building, establishing the needs assessment system and eligibility criteria, providing training to both formal and informal caregivers, and putting in place regulations to monitor and improve quality of care are also essential components of a well-functioning formal long-term care system (Mor, Leone et al. 2014, Hu, Li et al. 2019).

An expansion of the formal care sector will result in markedly heightened financial investment into the long-term care system, so how to finance the services is an issue that requires careful consideration. Countries have taken different routes in terms of long-term care financing. Some countries such as France choose to finance long-term care services through general taxation. In the case of England, formal care is funded mainly by the council tax of local authorities with additional support from the central government grants (which in most cases have been non-hypothecated). Other countries take the route of social insurance (e.g. Germany). There are also countries that adopt a mixture of both (e.g. Japan) (Fernandez and Nadash 2016).

Regardless of the options of financing, two issues are particularly important for the long-term care system in Indonesia. First, it is important to keep the eligibility criteria relatively strict and the financial commitment modest at the beginning (e.g. government support is provided to the most severely disabled older people). This is to leave room for cost containment and trial and error. Such an approach is more likely to be accepted by the local governments given their low political will (see above). Second, the costing of long-term care should be separated from that of health care. As we stressed at the beginning of the report, long-term care and health care are two different types of services, and the financial resources and human capital (skills, experience and expertise) required are not the same. This is not to say that the budget for health care and long-term care should be administered separately. Indeed, as many older people have both social care and healthcare needs, integration of health and social care is a challenge many countries have to address. Nonetheless, keeping the conceptual boundary of health and long-term care clear is crucial.
References


