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Chapter 7

How Adaptive Policies are in Japan and Can Adaptive Policies Mean Effective Policies? Some Implications for Governing Climate Change Adaptation

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1. Introduction

The Asia-Pacific region is one of the most climate change (CC) vulnerable regions in the world due to the relatively high proportion of its population depending on climate-sensitive sectors, dense population living in CC vulnerable geographical locations, and poor development of risk-governance systems. The national communications submitted by the developing countries to the United Nations Framework Convention on Climate Change (UNFCCC) showed gaps in its capacity, including research, to effectively cope with CC impacts (Kreft *et al.*, 2011). The need for enhanced adaptation research and policy-making capacity in

developing Asia was recognised in a series of stakeholder consultations conducted by the Institute for Global Environmental Strategies (IGES) and the work was carried out at Universiti Kebangsaan Malaysia, M.S. Swaminathan Research Foundation and Vietnam Institute of Meteorology, Hydrology and Environment (Pereira *et al.*, 2011).

IGES consultations concluded that practical demonstrations on promising mainstreaming options, capacity strengthening and streamlining financial mechanisms are crucial to making further progress. Furthermore, many policy-makers called for identifying metrics or indicators to monitor the effectiveness of adaptation actions. Mainstreaming adaptation concerns in sectoral policy-making is relatively new and research on adaptation metrics is almost non-existent.

Even today, important policy decisions in the agricultural and water sectors are made and implemented without the consideration of projected impacts of CC (Srinivasan and Prabhakar, 2009). One of the most important barriers identified was the limited capacity of researchers in the region to provide adaptation policy-relevant information. For example, research on indicators for monitoring the effectiveness of adaptation options at different spatial scales is completely lacking. Networking and communication among researchers and policy-makers focusing on adaptation are also extremely limited.

In the absence of adaptation-specific information for decision-making, one of the schools of thought suggests that promoting basic ingredients of adaptive decision-making may help to support effective adaptation to CC (Peterson *et al.*, 1997; International Institute for Sustainable Development and the Energy and Resources Institute, 2006). According to this school of thought, promoting

dynamic systems that can respond to known threats in a strategic manner reflects well the adaptive capacity of the system in question, and these systems are able to deal with CC and related uncertainties better than systems that are not ‘dynamic’ and ‘adaptive’ in nature.

Japan being a developed country and the signatory of the UNFCCC Kyoto Protocol, it has an obligation to reduce greenhouse gas (GHG) emissions by 6 per cent compared with the base year of 1990. At the national level, the emphasis appears to be more on the mitigation of GHGs than on CC adaptation (IGES, 2011). In addition to this there is an apparent understanding within Japan that its perceived threat from CC in agricultural and allied sectors could easily be managed. However, this does not mean that nothing has been done in CC adaptation. Several research programmes have been taken up within Japan to understand CC impacts and to implement actions on the ground (see Chapter 6 in this volume). These actions are dispersed across different ministries disguised under different names without being named as ‘climate change adaptation’. This gives an impression that Japan is yet to go far in designing and implementing a clear CC adaptation policy in terms of being clearly stated in its relevant national and provincial policy documents. For this reason this study assumes an importance for understanding the adaptive nature of policy-making in Japan and its implications for CC adaptation there, and for those countries that consider the country as being a leader in the field of CC.

2. Adaptive policies, policy dynamics and their role in climate-change adaptation

There are several definitions of the term ‘policy’ (Torjman, 2005). However, for the purpose of this chapter and from the viewpoint of public administration, a policy can be defined as a ‘purposive course of action followed by an actor or a set of actors in dealing with a problem or a matter of concern’ (Anderson, 1984, p. 3). There is a body of literature on why governments enact policies (Woll, 1974; Ingram and Smith, 1993; Considine, 2005; Torjman, 2005; Kay, 2006; Gerston, 2010). Most of these opinions converge to state that collective action should enable society to consume public goods and that a combination of several market failures affect the way in which public goods are produced, distributed and consumed (Weimer and Vining, 1992). Hence, the origin of the role of government in enacting policies is to enable equitable use of public resources, such as public goods.

On one hand, CC negatively impacts the developmental gains achieved by public (and private) interventions in past decades (Parry *et al.*, 2007), it impacts public goods (e.g. public infrastructure), resources (e.g. biodiversity and forests) and the well-being of individuals (e.g. livelihoods). On the other hand, CC would require public and private actions to mitigate GHG emissions and CC impacts. Therefore CC is a public problem, requiring public solutions with collective action, and hence it is a subject of public policy (Dessler and Parson, 2010; International Institute for Sustainable Development, 2011).

CC is ridden with uncertainties in terms of future projections on the nature and degree of impacts (Schneider and Kuntz-Duriseti, 2002; Manning *et al.*, 2004), hindering credible and proactive actions, including policy interventions to mitigate the negative impacts. However, uncertainties should not be the reason for inaction

(Maslin and Austin, 2012), and principles of adaptive management and adaptive policies should help in handling greater part of uncertainty (Peterson *et al.*, 1997; International Institute for Sustainable Development, 2011). The concepts of adaptive systems, adaptive management and policies hinge upon the fact that they help in developing alternative hypotheses, identifying gaps in knowledge and setting priorities (Peterson *et al.*, 1997).

Though the concept of adaptive policies is not new, the usage of this term in the context of CC adaptation can be traced to the International Institute for Sustainable Development's project entitled 'Designing Policies in a World of Uncertainty, Change and Surprise' (International Institute for Sustainable Development, 2011). However, the basic notion of a policy being dynamic dates back to several years before the beginning of the 2000s and has strong roots in a branch of policy science called policy dynamics (Baumgartner and Jones, 2002). This branch studies the feedback connections between the conditions and actors that are responsible for the development of a policy over a time period. According to this branch of policy science, policies can either remain unchanged over a period of time or change in a very predictable or unpredictable manner depending on the actors involved and the stimulus to which these actors respond. The evolution of this branch of policy science has strong roots in policy studies in the United States and benefits from the analysis of several decades of policy experience in that country.

Few similarities and contrasts can be drawn between the concept of adaptive policies and policy dynamics. The similarity between adaptive policies and policy dynamics is that both deal with how a policy evolves over a period of

time and how they deal with the dynamic pressures that operate within a domain where a policy is made to operate. The concept of adaptive policies states that policies have to deal with both known and unknown conditions operating within the sphere of influence that they have, that they may lead to unknown and unintended consequences and probably may not be as effective as they are designed to be (International Institute for Sustainable Development and the Energy and Resources Institute, 2006). This, in the science of policy dynamics, is considered as positive and negative feedback processes that induce equilibrium and stability in the system (Baumgartner and Jones, 2002). Both concepts deal with the institutions that are involved in designing and implementing policies and how (that is the processes through which) policies are made. Hence it can be concluded that a good understanding of policy dynamics can help the CC adaptation community well.

Understanding from both schools of thought – that is, policy dynamics and adaptive policies – seems to suggest that those policies and policy-making environments, including institutions and circumstances under which policies are made and implemented, that consider a broad range of conditions in designing and implementing policy solutions reflect better the ability for CC adaptation since such systems are able to deal with the uncertainties that are inherent in problems such as CC. This chapter aims to test the veracity of this understanding and its implications for CC adaptation.

For this study, Japan was chosen for three reasons: (i) In the international negotiations and the negotiation text (e.g. in the case of negotiations carried out under the UNFCCC) there is a consensus among many countries that developed

countries have the capacity to adapt and help developing countries to adapt by transfer of technology and other related knowhow from their experience, (ii) Japan has been in the forefront in various aspects of environmental and CC, and (iii) Japan has serious concerns about food self-sufficiency and hence policy effectiveness in this area, which is of paramount importance for the country.

Keeping the above background in view, the current research aims to examine whether all policies are characterised as adaptive would essentially lead to effective policies. Here, policy effectiveness relates to meeting the main objectives that these policies are intended to achieve. For example, several agricultural policies (see Table 7.1) in Japan have objectives of achieving food self-sufficiency and keeping the farming population within farming. We compared to what extent various amendments made to agricultural policies are able to achieve their objective as reflected in the published data.

3. Research methodology

This chapter is based on a Japanese case study entitled ‘Strengthening capacity for policy research on mainstreaming adaptation to climate change in agricultural and water sectors’ funded by the Asia Pacific Network for Global Change Research (Project Number CRP2010-02NMY-Pereira). As part of this project a consultation meeting with various stakeholders (total 28 participants) involved in policy research and government in agricultural and allied sectors was conducted on 28 June 2011 at the Japan Press Centre Building, Tokyo, to understand how dynamic policies and institutions in Japan are formulating and implementing various policies related to agriculture and natural resource management. The participants

were selected based on their expertise in agricultural policy processes in Japan. The participants discussed the policy environment in agricultural and allied sectors in Japan, how dynamic it is, and reasons behind the effectiveness of policies. The specific subjects discussed were the historical analysis of agricultural policies in Japan, the declining number of farmers in Japan and the evolution of related policies, historical analysis of interventions to deal with floods and droughts in Japan, and fiscal policy support for dealing with agricultural and natural resource-management issues in Japan.

Considering the theoretical background presented in the previous section, the framework used for assessing the policy effectiveness and adaptiveness of policies in this study include asking a set of questions: (i) when the policies were introduced to address the perceived problem, (ii) how frequently the policies were amended to address changing circumstances, (iii) how effective the policies introduced are, and (iv) how the effectiveness is related to when and how frequently policies were introduced. These questions have also formed the guiding sections for discussion in this chapter. The policy effectiveness is judged by comparing the policy objectives with the trend in certain indicators, such as the area under agricultural land and the size of the farming population.

A questionnaire survey was conducted to get a consensus on the issue of adaptive policies and to identify important issues in the agricultural sector in Japan and the related policies introduced. While the consultation meeting was used to understand the overall agricultural policies and issues in Japan, the questionnaire survey helped us to obtain ranked opinions on the policies. The questions asked for information about respondents, identification of important issues in agriculture in

Japan, important policies introduced, and opinion about selected policies for each issue ranked high by the respondent. The respondents included PhD students and experts in agricultural policy in Japan considering their knowledge and expertise on policy issues related to agriculture and natural resource management. Eight responses were obtained from 30 questionnaires sent by the time of the initial drafting of this chapter. Since this is a pilot survey the results should be viewed as provisional. The results corroborate the discussions in the consultation meetings.

4. Findings and discussion

4.1 *When policies were introduced?*

In order to answer this question, historical analysis of various agricultural and allied policies in Japan was conducted from the available literature and the findings are presented in this section (see Table 7.1). The purpose was to identify a policy as 'dynamic' if it undergoes continuous change over the years as a result of external pressures operating on agricultural and allied sectors.

Table 7.1 presents a list of important driving forces that operated during various phases of agricultural policy development and policies that have been implemented in Japan in the past seven decades (modified and substantially updated from Ohara and Soda, 1994). Agricultural policy development in Japan can be broadly divided into six time periods – that is, post-war reconstruction period (1940s–1950s), Post-Agricultural Basic Act (1960s), low economic growth period (1970s to early 1980s), globalisation period (mid-1980s to early 1990s),

structural reform of agricultural and rural policies period (most of the 1990s) and realignment of agricultural and rural policies to global trends (most of the 2000s).

Driving forces for policies introduced during these periods vary greatly. During the post-war reconstruction period (Table 7.1) the driving forces for policies were labour flow, the dominance of landlords, reconstruction of the economy and the decline in farming population in rural areas impacting food self-sufficiency. The government had to address these issues early on by introducing policies such as the Staple Food Control Act (1942), the Agricultural Cooperatives Act (1947), the Agricultural Land Act (1952), the Act for Promotion of Mechanisation (1953) and the New Rural Construction Act (1956). All of these acts very much correspond to the issues identified during that period. The same follows for most of the driving forces and policies mentioned in Table 7.1.

From this table we can conclude that agricultural policy environment in Japan can be characterised as either ‘reactive’ or ‘adaptive’ since the government is able to continuously introduce new policies and amend old ones (refer to our definition of adaptive policies earlier in this chapter). It is reactive for the reason that mostly the policies were made in response to emerging issues, but mostly well within a decade, within which these policies were identified and implemented with a reasonable period of identifying the issues by the policy-formulating institutions and stakeholders. However, this conclusion should be read with caution since there is no way for this research to identify ‘when’ a particular issue or driving force has come into existence since most agricultural policy issues have no clear beginning and end point but rather seamlessly emerge over time. Nevertheless, from this review it can be broadly concluded that agricultural policies in Japan were made in

immediate response to the issue once it came to the notice of the policy-makers in the country. This addresses the question of how soon a policy was made and brought into effect in Japan.

4.2 *How frequently were policies amended?*

To answer the question of how frequently policies have changed over the period (amended or repealed), following the changing circumstances or driving forces, the number of amendments and repeals some major policies have undergone were tabulated (Table 7.2).

It is clear from the table that some policies have undergone very frequent changes, as often as every year during their implementation (e.g. Agricultural Cooperatives Act, Agricultural Land Act and Food, Agricultural and Rural Areas Basic Act), while others have remained more or less the same (e.g. Agricultural Improvement Promotion Act and Act on Subsidies for Agricultural Improvement).

From Table 7.2 the following conclusions can be drawn: (i) the high frequency of changes may have to do with the importance of the issues that these policies address, (ii) frequent changes in governments, possible lack of consensus within government and institutions responsible for their formulation and implementation, inability of earlier versions of policies to stem the issue, and (iii) lack of clear understanding among institutions and governments on how to address the problem. However, what these also show is the willingness of governments to tackle the issues with continuous efforts at policy level seeking a correct solution. By this, governments and institutions appear dynamic in nature and hence have the ability to adapt to changing external pressures affecting policies.

4.3 *How effective are the policies?*

While the question of how soon a policy was introduced and how frequently it was modified to keep abreast with changing circumstance is important, even more so is that the policy delivers the intended outcomes (i.e. meeting its objective). To identify the effectiveness of policies, they were overlaid on the time series diagrams of various indicators which reflect the effectiveness of a policy for a better visual representation.

4.3.1 *Number of farmers*

Declining numbers of farmers has been a major cause of concern for Japan as this is leading to heavy reliance on imported food, thus burdening the national economy (Namiki, 2007). Various specific policies and amendments were introduced to control the outflow of farmers from agricultural to non-agricultural sectors and to increase new recruits into the farming sector.

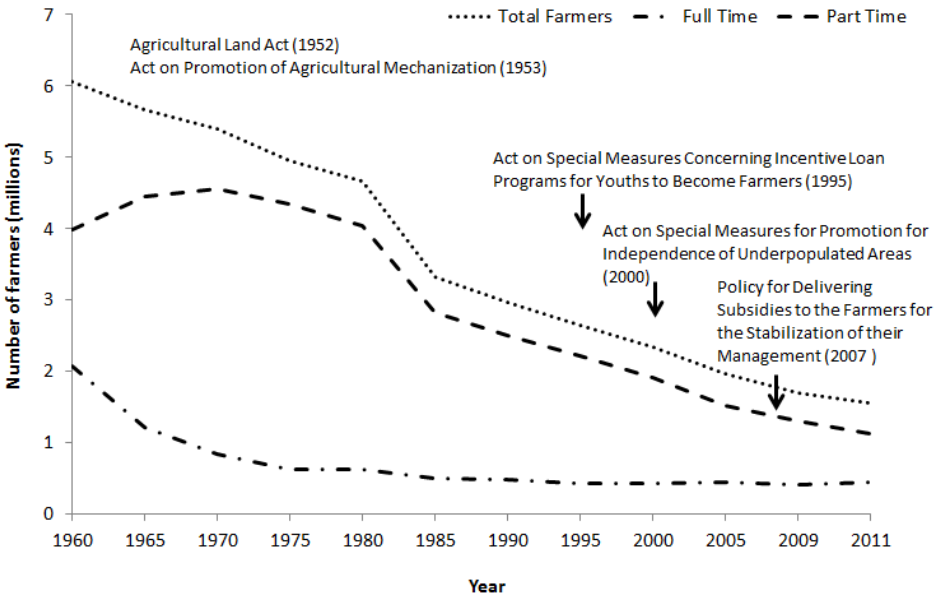

Figure 7.1: Trend in the number of farmers in Japan over the past five decades and various policies introduced to stem the decline in their number.

Source: Adapted from the Ministry of Agriculture Forestry and Fisheries of Japan (2011a and 2011b)

Figure 7.1 depicts the major policies introduced and their effectiveness on the trend in the number of farmers (full and part time). It is clear from the figure that the policies introduced over the years have not been able to control the outflow of farmers as reflected by the continuous decline in number of farmers in the country.

4.3.2 *Decline in farmland*

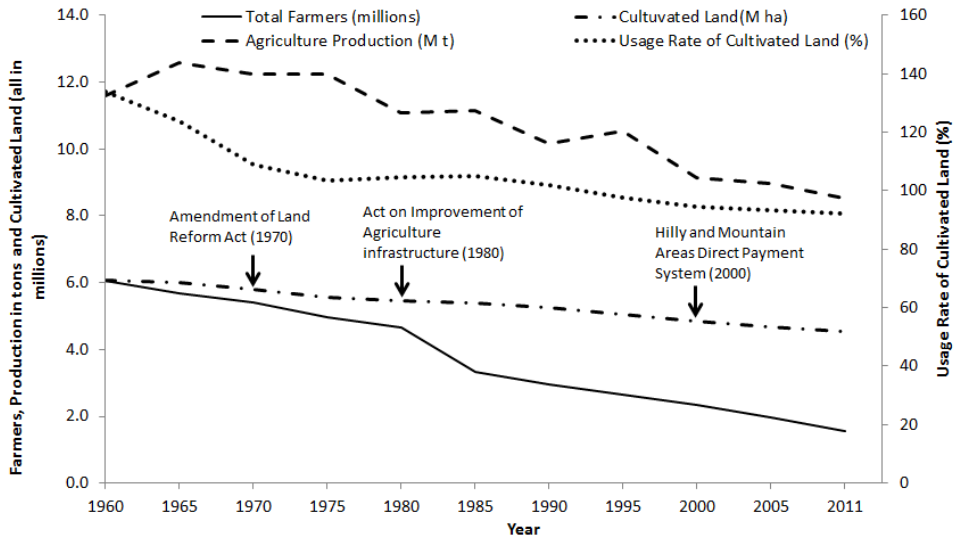

Figure 7.2: Land-use changes and various policies introduced to control land-use change.

Source: Adapted from the Ministry of Agriculture Forestry and Fisheries of Japan (2011a and 2011c)

A factor that is closely associated with the declining number of farmers is the associated decline in acreage of farmland. Figure 7.2 shows the trend of total population, agricultural production, usage rate of cultivated land and number of farmers. As in the earlier case, several policies were introduced to control the change in land use from agricultural to non-agricultural purposes, though some initial leverage was applied for the deliberate movement of land to non-agricultural purposes for promoting industrialisation during the early years of economic growth in Japan. However, such policy support for land conversion has slowly been withdrawn in recent years (Kazuhito, 2008). The main policy introduced to control the land-use change from agricultural to non-agricultural was the Amendment of Land Reform Act (1970) and other related policies. Figure 7.2 also shows that none

of these policies could stem the continuous decline of farmland over time. Please refer to the limitations part of this chapter for more explanation of this conclusion.

From the above examples of trends in farming population and land-use changes it is clear that related policies have failed to stem the trend. More interestingly, these are the policies that have undergone most amendments since they were introduced (e.g. the Agriculture Land Act has undergone 66 amendments, Table 7.2). It can be concluded from these observations that the indicators such as ‘how soon policies were introduced’ and ‘how frequent policies were amended’ may not necessarily lead to effectiveness in policy outcomes.

4.4 Results of pilot survey on adaptive policies

Most respondents indicated the decline in number of farmers as a main policy issue for agriculture in Japan (38 per cent) and they opined that the Agriculture Basic Law or any law that supports farmers and group farming is an important policy intervention for Japan. As the second most important policy issue, most respondents ranked declining global competitiveness of Japanese agricultural produce followed by increasing income gap between rural and urban areas in Japan (see Table 7.3 for the responses).

Respondents were asked to rate specific policies for their timeliness, adaptiveness, effectiveness and strategy on a scale of 1 to 5 where 1 is least timely and 5 is most timely. Those who said that the declining number of farmers is an important policy issue in Japan have rated the related policies as least timely, least to moderately effective (which is corroborated by the Figure 7.1), least to moderately adaptive and least to moderately strategic in nature.

Overall the respondents were not satisfied with the effectiveness of policies introduced in Japan. This very much corroborates the discussion in Section 4.3

wherein the introduction of different policies did not lead to positive changes in the trend of the number of farmers and land used for agricultural purposes.

5. Limitations

By nature, due to reasons not clear to us, agricultural issues may remain ‘under the carpet’ or ‘invisible’ until they surface after crossing a threshold. Identification of this period from literature is often difficult and was outside the scope of this research. Hence we could not pinpoint the exact year when a particular policy problem came into existence for the purposes of assessing the timeliness of introducing policies. The policy effectiveness was assessed by comparing the trends in certain indicators such as the size of the farming population and the area under agriculture. Though several policies were introduced to stem the declining trend in these indicators, one could see that these continued unabated (figures 7.1 and 7.2). Though we concluded that this is a clear indication of policy failure, the observed trends could also have happened due to forces outside the purview of the agricultural sector. For example, globalisation, lucrative jobs in technology and the service sector, which provide a better income and working conditions, have a much stronger driving force than the solutions offered by the introduced policies to keep people in farming. Taking all of these outside forces into consideration would further strengthen the study.

However, it is still safe to conclude that agricultural policies failed to take into account what is happening outside agricultural sector and hence can be concluded as reason behind policy failure. This stresses the need for

comprehensiveness in understanding and the need for policies to have broad reaching impact for policies to be effective.

6. Conclusion

One of the important criteria for assessing the readiness of a country to adapt to CC has been reported as its ability to formulate and implement policies in an adaptive manner which can be evaluated in terms of how soon policies are implemented and how frequently they undergo changes to reflect the changing circumstances. This chapter presents the results of a pilot survey that corroborates the findings from the literature review and the consultation meeting conducted on this subject.

From the preliminary assessment presented in this chapter, it is clear that though countries like Japan have a good history of formulating and implementing several policies to address perceived issues in agriculture, the mere assessment of these policies in terms of how soon they were introduced and how often they were modified doesn't explain the policy effectiveness. The effectiveness of a policy would go beyond these indicators/criteria presented in this chapter. The additional criteria for the effectiveness of policies could be whether they are designed based on the right stimuli, the correct perceptions of policy-makers of these stimuli, and if the policy is based on the right information. In addition, the evaluation of these policies should be done based on their outcome and should not be limited to indicators such as timeliness, which could be misleading, as clearly shown in this chapter. This has major implications for the community engaged in CC adaptation since this community needs to take decisions often based on limited information.

Hence, providing policy-relevant information that is timely is crucial for effective policies.

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Table 7.1: Major agricultural issues faced by Japan and major policy interventions addressing the issues during the past seven decades.

Period	Major policies/acts/events	Driving issues*
1942–60	Staple Food Control Act, Agricultural Cooperatives Act, Agricultural Improvement Promotion Act, Land Improvement Act, Agricultural Land Act, Act on Promotion of Agricultural Mechanisation, Act on Subsidies for Agricultural Improvement	Labour outflow into other industries, farmland dominance by landlords, reconstruction needed for subsistence farming framework, and decline in farming population in rural areas
1961–72	Agricultural Basic Act, Forestry Basic Act, Amendment of Land Reform Act, Establishment of Japan	Labour outflow into other industries, full-time farmers decrease, part-time farmers

Period	Major policies/acts/events	Driving issues*
	Agricultural Cooperatives	increase, soil natural capability decrease due to overusage of chemical fertilizers and pesticides, income disparity between rural and urban community, and farming population decline in rural areas
1973–82	National Land Use Planning Act, Act on Agricultural Land, Agricultural Land Use Promotion Act; Act on Promotion of Improvement of Agricultural Management Foundation, Committee on National Rice Cultivators	Labour outflow into other industries, full-time farmers decrease, part-time farmers increase, income disparity between rural and urban community, Farming population decline in rural areas, and environmental pollution issues
1985–92	Agreement on Multipolar Pattern National Land Formation, General Agreement on Tariffs and Trade, Ministry of Agriculture Forestry and Fisheries of Japan announced ‘A New Way to Food, Agriculture and Rural Policy’	Income disparity between rural and urban community, full-time farmers decrease, part-time farmers increase, cultivated land abandonment, and farming population decline in rural areas
1993–	Establishment of environmentally	Change in farmland usage

Period	Major policies/acts/events	Driving issues*
2001	sound agriculture implementation headquarters, Act on Stabilization of Supply, Demand and Prices of Staple Food; Repeal of Staple Food Control Act; Minimum Access System of Rice; Act on Special Measures on Incentive Loan Program for Youths to Become Farmers, New Rice Policy, Agricultural Policy Reform, Food, Agriculture and Rural Areas Basic Act, Act on Promoting Sustainable Agricultural Production Practices, Hilly and Mountainous Area Direct Payment System	(farmland liquidation), decrease in full-time farmers, increase in part-time farmers, increasing abandonment of cultivated land, ageing of farming community
2002–10	Management Policy for Promoting Structural Reform of Agriculture Report, New Rice Policy, Amendment of Food Control Act, Restriction of Genetically Modified Crops by Local Governments, Measures and Policies for the Improvement of Conservation of Rural Land; Comprehensive Strategy	Change in farmland usage (farmland liquidation), excess production of rice, decrease in full-time farmers, increase in part-time farmers, increasing abandonment of cultivated land, ageing of farming community, food security, increasing need for adaptation to CC

Period	Major policies/acts/events	Driving issues*
	on Countermeasures Against Global Warming, Trans-Pacific Partnership, Income Compensation System for Individual Rice Farming Households	

Source: Adapted from Ohara and Soda (1994) p.168

Table 7.2: Amendments in major agriculture and related policies in Japan.

S. N	Policy/act	Number of amendments	Period when the amendments were carried out	Frequency (changes per year)
1	Staple Food Control Act	27	1943–1994	0.5
2	Agriculture Cooperatives Act	83	1948–2010	1.3
3	Agricultural Improvement Promotion Act	16	1950–2004	0.3
4	Land Improvement Act	55	1951–2011	0.9
5	Agricultural Land Act	66	1953–2010	1.2
6	Act on Promotion of Agricultural Mechanisation	13	1962–2006	0.3

S. N	Policy/act	Number of amendments	Period when the amendments were carried out	Frequency (changes per year)
7	Act on Subsidies for Agricultural Improvement	16	1961–2010	0.3
8	Agricultural policy	3	1978–1999	0.1
9	Act on Promotion of Improvement of Agricultural Management Infrastructure	19	1989–2010	0.9
10	Act on Stabilisation of Supply, Demand and Prices of Staple Food	9	2000–2010	0.9
11	Act on Special Measures Concerning Incentive Loan Program for Youths to Become Farmers	11	1995–2010	0.7
12	Food, Agriculture and Rural Areas Basic Act	10	2000–2010	1.0
13	Act on Promoting the Introduction of Sustainable Agricultural Production Practices	3	2002–2010	0.4

S. N	Policy/act	Number of amendments	Period when the amendments were carried out	Frequency (changes per year)
14	Act on Special Measures for Promotion of Independence for Underpopulated Areas	9*	2000–2011	0.8
15	Policy for Delivering Subsidies to the Farmers for Stabilisation of Agriculture	1	2009	0.0

* with another amendment scheduled in 2016

Source: the authors

Table 7.3: Important issues identified and policies suggested by the respondents in the first round of the Delphi Survey.

Rank category	**Important issue hindering agriculture in Japan**	**Important policies for overcoming these issues**
First	Declining number of farmers	Agricultural Basic Law Support for new farmers and group farming
Second	Declining global	Protecting domestic

Rank category	Important issue hindering agriculture in Japan	Important policies for overcoming these issues
	competitiveness of Japanese agriculture	agriculture □ Promoting minimum access policies □ Promoting industrialisation
Third	Increasing income gap between rural and urban areas	□ Subsidies for mountainous areas □ Compensate farmer income

n = 8, pilot survey

Source: the authors

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List of abbreviations

CC climate change

GHG greenhouse gas

IGES Institute for Global Environmental Strategies

UNFCCC United Nations Framework Convention on Climate Change