2018
TWYCC
Youth Climate Manifesto

Taiwan Youth Climate Coalition
台灣青年氣候聯盟

TWYCC
Youth Climate Manifesto

I

The problems we are facing under climate change and the updated knowledge of climate change issue is new and broad. To tackle with future challenges, the civil society should empower and capacity-build itself more actively and spontaneously.

EN 02 TR 06 AG 11

II

Young generation should realize more progressive participation of climate action to strive for and step towards the future we want.

AG 09

III

Government' s climate policies for mitigation and adaptation should include both incentives and punishments, and none of each should be one-sidedly less emphasized.

EN 05 BU 01 TR 02 TR 04

IV

Climate policies for mitigation and adaptation often involve multiple professions. The authorities of central and local governments regarding to concerned polies should ensure cross-departmental cooperation by coordinating information, resources and mission.

EN 07 EN 08 BU 02 BU 05 TR 08

V

The realization of climate policies for mitigation and adaptation needs contribution and cooperation from multi-stakeholders. Therefore, the policy information should be delivered more effectively.

BU 03 TR 07 AG 01

VI

Different types of climate actions for mitigation and adaptation can achieve their best practices with proper implementing scale and institutes. In order to realize climate action, the government should carefully review the objectives of policy and information.

BU 04 AG 04 AG 06 AG 10

VII

The problems we are facing under climate change impacts are at times unprecedented. New policies and regulations should be adopted in time, and the existing ones should be flexible enough to adapt the upcoming challenge.

EN 01 TR 01 TR 09 AG 07

VIII

Sometimes market-oriented solutions and private sector implementation on climate policies for mitigation and adaptation bring about more effective outcome, and equipped with more operational experience. Governments should better play the role to build the framework, instead of conducting its own approaches.

EN 03 EN 04 AG 03

IX

Climate policies for mitigation and adaptation should create enough conditions for all citizens to participate in, where the threshold and/or exclusivity of public engagement should be lowered at its most possibility.

EN 06 AG 05 AG 08

X

The problems we are facing under climate change could not be solved in immediate time. Governments should take sustainable planning and implementation regarding to climate policies.

TR 03 AG 02

XI

Climate policies for mitigation and adaptation sometime conflict with existing social styles and common values. To expect climate policies to be more compatible with the society, policies should be communicated and implemented step by step.

TR 05

Appendix

Energy

EN 01

Manifesto VII

Geothermal power generation is composed of many elements,[1] each of which is regulated by different government units. Only in recent years has geothermal power generation been emphasized, and the ways in which the different elements need to be combined received little consideration when the relevant regulations were originally established. Therefore, there are many restrictions that hinder the development of geothermal power.

Geothermal power generation requires the extraction of underground hot water. However, the usage of this hot water (the thermal source) is regulated by the "Hot Spring Act" and the extraction licenses for hot springs are only valid for 3 years.[2] This short time period means that the licenses are poorly suited for Taiwan's "Feed-in Tariff (FIT)" system[3] and therefore causes higher investment risk for developers.[4]

The "Electricity Act" amendment in 2017 established a 'renewable energy power generation industry' and defined it as a 'non-public business' to speed up the development of renewable energy.[5] There are many geothermal resources located in forest areas in Taiwan, yet the "Forest Act" only regulates the usage of forest area for 'public businesses' and some specially permitted items[6] and excludes electrical power generation. As a result, geothermal power plants cannot be established in many of the places that have adequate geothermal resources.

Conclusion: The government needs to have a comprehensive plan when promoting activities for mitigating climate change and to carefully evaluate whether there are conflicts between existing laws when setting objectives.

[1] The primary elements are the thermal sources, land, capital and techniques. The principle of usage of 'land' is governed by the existing laws and competent authorities with planned areas for different usage. For example, the 'forest land' is managed by the "Forest Act" and falls under the jurisdiction of the Forestry Bureau.

[2] Article 10th of the "Spring Act"

[3] Feed-in tariff (FIT) is a system to ensure the eventual purchase of renewable power generation facilities by the government. Unlike 'subsidies' or 'allowances', the goal of the policy is neither 'purchasing renewable energy facilities' nor 'using renewable energy' but the "guaranteed, high price" purchase for 20 years of the "electrical power" generated by renewable energy facilities. The purpose of this policy is to allow the management of renewable energy facilities to run the power plants stably and therefore directly maintain and increase the efficiency of power generation facilities.

[4] Private businesses can calculate their return on investment by essentially comparing their initial investment in the power generation facilities with their expected returns within the FIT system. That is, the initial investment in the facilities can be compensated gradually by selling electrical power to the government. Therefore, a critical investment consideration for the business is whether the power plant will be able to continuously generate electrical power over this 20-year period.

[5] According to the "Privately Owned Public Utilities Supervisory Act", the 'electricity business' is defined as a 'private-public business.' Therefore, operation results must be reported to the competent authorities each year and there are many restrictions in calculating profits in the financial statement. In 2017, the Electricity Act was amended to promoting renewable energy, adding "renewable energy power industry" as a new type of non-public business and add in a new item as 'renewable energy power industry',noting it as non-public business so that there are less restrictions in operating and promoting complete market competition.

[6] Article 8th of "Forest Act"

EN 02

Manifesto I

In Taiwan, geothermal power is categorized by the drilling depth of the power system; the categories are shallow geothermal power and deep geothermal power. These categories are used by both the government and the scientific community. Shallow geothermal power has a well depth of 1000 meters to 2000 meters and generates power by extracting groundwater; deep geothermal power has a well depth of over 3000 meters and does not extract groundwater but rather generates power by pouring high-pressure fluid into the well. Nevertheless, the categorization is misleading.[7]For instance, years ago, a geothermal power project in Switzerland with a 5000-meter drilling well was abandoned after inducing earthquakes.[8] [9] Some argued that the depth of the well caused the earthquakes; but in this case, the wrongful act was the "means of extraction". In fact, many geothermal energy power plants working 4000 meters underground generate power by extracting groundwater, meaning that hydraulic fracturing is not necessary and therefore the risk of inducing an earthquake is negated. Thus, the categorization "shallow" versus "deep" geothermal power is not correct and can lead to unnecessary controversies.[10]

Conclusion: In Taiwan, knowledge of climate change should stay up to date with current developments, and also build effective information access channels with experts within - and outside of the country.

EN 03

Manifesto VIII

In 2017, the Ministry of Science and Technology launched the "National Energy Program - Phase II (NEP-II)." [11] In the "Yilan Geothermal Exploration Prospecting Studies" project, a budget for drilling three geothermal wells was established; however, once the project was underway, 'well logging' was not executed thoroughly before the drilling of the productive well,[12] with the eventual result that the budget ran out before the project was finished. After testimony, it was revealed that

[7] Huang Shi-Wei (2015). Energy Report. The hot Earth: the opportunities and challenges of geothermal energy. Bureau of Energy, R.O.C.; Lee Po-Yu (2013). Generate energy with the Earth's heat: deep geothermal power. Pan Sci.

[8] The development of EGS (Enhanced Geothermal System) is used to cope with hot rocks underground where groundwater does not exist; high-pressure water is pumped underground. Through hydraulic fracturing, it creates artificial fractures in the bedrocks. The water is heated through the fractures and capture the thermal energy. Hot water is then forced out through a second borehole; the heat of the water is thus converted into electricity. Such a method of artificially creating fractures in the rocks may induce earthquakes.

[9] In 2006, the Swiss geothermal energy company, Geopower Basel AG, conducted drilling in Basel to generate power commercially, penetrating up to 4.8 kilometers underground. The project was suspended in 2006 because the drilling accidentally triggered a series of earthquakes, one registering 3.4 on the Richter scale, damaging properties in the city.

[10] Wang Shou-Cheng (2017). Can Taiwan not develop geothermal energy? Truth under the misunderstandings of geothermal power. TechNews.

[11] Taiwan's is a leading carbon emitter, 18th in the world in per capita carbon emissions, and 22nd in the world in total carbon emissions. Each year, growth in GDP has been matched by proportional growth in CO2 emissions. It is hoped that Taiwan can follow the path of some OECD (Organization for Economic Co-operation and Development) countries in reducing emissions and decoupling emissions from GDP growth. The "National Energy Program - Phase II" was established through a series of resolutions emerging from several conferences held by the Energy Policy Committee of the Executive Yuan and the Steering Group of Energy Development of the Ministry of Science and Technology. The program focuses on the 'safety', 'efficiency', and 'cleanliness' of newly generated energy and takes the industrial environment paradigm shift into account in its assessments.

[12] During the process of developing geothermal electric power, it is hard to confirm that whether there is useable heat source exists or not. Even with the newest science and technology, the measured temperature after drilling may vary from the predicted temperature by up to 50%. Therefore, when developing geothermal energy, the 'well logging' is drilled first to allow temperature measurement before drilling the productive well used to actually generate electricity. The cost of the well logging is one-third to one-fourth that of drilling the productive well. Consequently, most geothermal enterprises apply well logging to be sure that actual temperatures at the source will meet their needs.

the temperature of the well did not reach the required height so that electricity could not be generated from the plant.

Conclusion: The government should be more open to discussions with non-governmental organizations and enterprises for research projects designed to develop commercial operations.

EN 04

Manifesto Ⅷ

A plan executed by the Bureau of Standards, Metrology and Inspection (M.O.E.A, R.O.C) aims to build up local capacity for conducting marine warranty survey (MWS) assessments.[13] Before offshore wind farm developers can receive project financing loan from banks, the construction projects have to be approved for property insurance. Due to the operating risks involved, domestic insurance companies purchase insurance from "international reinsurance companies" for offshore wind power projects. International reinsurance companies, in turn, request the developers to receive a MWS approval.

Since the approval takes a lot of money and the process is time-consuming, the M.O.E.A plans to build up local capacity for conducting MWS assessments within the public sector. However, the international MWS service market is more or less a oligopoly in reality. International reinsurance companies only accept MWS approvals from specific European and American companies. Therefore, MWS approvals issued by the M.O.E.A are likely to be rejected by reinsurance companies, preventing approval from domestic insurance agencies and project financing loan from banks.

Conclusion: If the government wants to facilitate the development of renewable energy through market-oriented policy tools, it has to evaluate market operations more carefully instead of simply pursuing technology and skills.

EN 05

Manifesto Ⅲ

According to the "Greenhouse Gas Mitigation Action Plan for the Energy Sector" proposed by the Environment Protection Administration, the "Renewable Energy Certificate (REC)" is a policy designed to "induce supply through increasing demand." By giving REC additional value, construction of renewable energy can be incentivized.

In 2017, "Taiwan Renewable Energy Certificate (T-REC)" program was launched. It provides incentives for both private and public sectors to prove carbon emissions they have achieved.

However, as of the end of 2018, little voluntary demand for the T-RECs has come from the private sector.

Most REC systems around the globe have a legally-binding component. Though the "Greenhouse Gas Reduction and Management Act" has an obligatory fining mechanism, it has not been enforced yet. Hence, the market for T-RECs at the present time is still underdeveloped, due to a lack

[13] The Marine Warranty Survey (MWS) is a service in which an independent third party assesses marine engineering projects. The risks and uncertainty of marine engineering are generally relatively high. Therefore, MWS assessors evaluate projects beforehand and then supervise the process personally to lower the risks. If the projects pass all the assessment processes, a Certificate of Approval (COA) is issued. Generally speaking, the insurance become effective only after a project has received a COA.

of stable and sufficient incentives to attract investments from renewable companies.

Conclusion: To achieve effective carbon reduction, climate policies should include both incentives and punishments, and even mandatory requirements where needed.

EN 06

Manifesto IX

Domestic renewable energy certificates (T-REC) are designed to be binding, and the incentives they offer are geared more towards large-scale energy consumers.

Under the current regulations, tradable T-REC can only be obtained by renewable energy generators who produce and consume electricity. After integrating with the grid, T-REC are inseparable from the trading of electricity on the market, which means that the certificates and the electricity being generated need to be sold to electricity consumers as a package.

For households and small industrial energy users, this binding model is not very attractive in terms of using renewable energy and reducing greenhouse gas emissions. Under the model, small households and industrial energy users are required to purchase T-REC when they purchase renewable electricity, causing the price of electricity to rise. Thus, this binding model does not offer any financial incentives for small-scale energy users.

Even though it would be difficult to track the certificates and calculate the greenhouse gas emissions under a non-binding renewable energy certificate model, under appropriate regulations and management, a non-binding model would be more suitable for promoting renewable energy certificates. In considering whether to continue using the binding model or not, we should think about how the policy encourages the participation of average users in the development of renewable energy, rather than the participation of just the large-scale energy users.

Conclusion: Climate change mitigation and adaptation strategies should be careful to avoid exclusionary policies and think about how to encourage the participation of a wide array of stakeholders.

EN 07

Manifesto IV

While conducting research on the Renewable Energy Certificate (REC) policy, the Energy Group of TWYCC often received inconsistent information from different sources. To promote the REC policy, the government established a liaison in the Bureau of Standards, Metrology & Inspection.[14] However, questions raised by REC applicants often cannot be answered by the contact person, especially regarding the details of the implementation of the REC, such as regulations, the realization of the system, etc. Questions often need to be forwarded to other office units in order to ensure an accurate response.

On the other hand, due to the complicated division of duties within the Taiwan Power Company,

[14] The REC policy is coordinated and planned by the Bureau of Standards, Metrology & Inspection, but many other institutions are also involved. When TWYCC's Energy Group was conducted research through phone interviews, in addition to the Bureau of Standards, Metrology & Inspection, queries were forwarded to the Taiwan Power Company, the Electronics Testing Center Taiwan, the Chung-Hua Institute for Economic Research, the Taiwan Institute of Economic Research, among others. Responses received from different institutions were often inconsistent and conflicting.

when staff are asked questions outside of their work discipline, the query will often be transferred through several different office units, and the response may differ from person to person. Ensuring that information is correct often requires that time be spent weighing up the credibility of sources and/or comparing and scrutinizing different official documents.

Conclusion: Climate policies cover a wide range of disciplines; the implementation of such policies should thus include establishing a group amongst the associated institutions working to ensure the consistency of information between the different institutions and to facilitate accurate communication of such information.

EN 08

Manifesto IV

Currently, the regulatory division of labor related to renewable energy in Taiwan is quite complex. The "emission of greenhouse gases" is regulated by the Environmental Protection Administration, the "setting of power generation equipment" is governed by Bureau of Energy, "power generation, power transmission and distribution, and power selling" is governed by the Taiwan Power Company, and "approval system for renewable energy certificate" is governed by the M.O.E.A.

Even though approval of renewable energy by a third party is performed by the M.O.E.A., the detailed division of labor causes processing and operating problems which are difficult to resolve.[15]

The current regulatory division of labor leads to a time-consuming process for modification and adjustments of T-REC. While the T-REC system has been launched in a hurry, flaws occured in the newly designed policy -- though it seems to be aligned with the international community. There are numerous unresolved problems, and the policy is currently difficult to implement.

Conclusion: Climate and energy-related policies usually involve different fields of expertise. Cross-agency working group need to be established when the policies are executed to achieve sufficient communication, coordination and information integration between different agencies.

[15] Since few users have installed smart meters that is capable of sending information back automatically, manual records are still being used. Whether the M.O.E.A gets data from Taiwan Power Company or creates a database independently to manage renewable energy data electronically is still being negotiated.

Residential Building

BU 01

Manifesto III

At the present time in Taiwan, apart from the Building Code and Regulations,[1] there are no measures to regulate energy consumption for buildings after a new one has been granted a use permit. Such existing buildings accounts for 97% of the buildings in Taiwan. Without the enactment of further laws, there are simply not enough incentives to improve energy conservation in such buildings.

How to elevate the energy efficiency of existing buildings?

The Energy Performance Certificate (EPC),[2] a system introduced by the EU, requires an evaluation of energy efficiency to be performed whenever a house is rented out or sold, prompting landlords to make efficiency improvements. However, household electricity consumption in Taiwan comes mainly from demountable air conditioners, which are usually removed when units are sold. As a result, EPC in Taiwan might not accurately reflect real energy consumption.

Is there a way to improve energy efficiency in Taiwan's buildings?

We believe that bettering the energy conservation capacity of buildings is essential, through enhancing heat insulation, improving ventilation, and so on. However, now conservation promotion projects are targeted only to official buildings and schools. No broader policies have, as of yet, been enacted into law.

The Construction and Planning Agency of the Ministry of the Interior should work to enhance energy conservation in buildings through new regulations at the soonest possible time.[3] For example, the agency can regulate building design more strictly through regular examinations or mechanisms similar to the EU' s EPC program.[4]

Conclusion: The government should summon the courage to enact laws which enforce compliance with conservation measures. Laws that simply 'encourage' greater conservation are simply not sufficient.

[1] The Building Code and Regulations is a major regulation in Taiwan enacted by the Construction and Planning Agency, Ministry of the Interior. Energy conservation designs, such as greening, water retention, thermal insulation and opening ratios, can be found in "Green Buildings" (Chapter 17). But regulations targeting residential buildings are rarer and laxer. Furthermore, only new buildings are regulated.

[2] The Energy Performance Certificate (EPC) is a regulation from the Energy Performance of Buildings Directive. It requires buildings in every country to receive an EPC when they are initially built, sold or rented. The EPC evaluation includes quantification ratings, conditions of energy consumption, advice for improvements, etc.

[3] For instance, the Energy Conservation Audit and Disclosure Ordinance introduced by Austin, the capital of the State of Texas, requires that the energy efficiency of houses aged over ten years should be evaluated before transactions, and related information should be disclosed to buyers. In addition, the energy efficiency of rental units needs to be examined every ten years, and related information needs to be revealed to residents.

[4] The EPC introduced by the EU should serve as a model. According to a report presented by the Department of Energy and Climate Change in the UK, prices of houses sold are directly proportional to EPC ratings. (2013, *An Investigation of the effect of EPC ratings on house prices*.)

BU 02

Manifesto IV

Currently, the Construction and Planning Agency is responsible for supervising building designs, and according to the Energy Management Act, the Bureau of Energy of the Ministry of Economic Affairs is in charge of managing utilization equipment. The policies of these two departments are limited to their own areas of authority. Nevertheless, the energy consumption of buildings is strongly related to both building design and utilization equipment. Reducing carbon emissions thus requires a comprehensive plan.

For instance, the Energy Conservation Act[5] launched by the Bureau of Energy, focuses on subsidizing facilities renovation, while putting no emphasis on energy conservation from the perspective of architectural design, resulting in a lack of a coherent plan for design-related energy conservation across Taiwan' s counties and cities.

No mechanism for controlling the overall energy use of buildings, such as the EU' s Energy Performance Certificate, can function effectively without simultaneous management of utilization equipment and building design.

We hope that the Construction and Planning Agency and the Bureau of Energy will forge a cooperative relationship in the future, enacting policies that help not only manage but also enhance the energy efficiency of Taiwan' s buildings.

Conclusion: The government should ensure cross-departmental cooperation when enacting climate-related policies.

BU 03

Manifesto V

"Citizen Participation" is a vital element of the "Local Government Cooperative Plan on Residential and Commercial Energy Conservation". This plan requires not only the assistance of the service industry, local governments, schools, communities and other units to conserve energy, but also needs the participation of the populace.

However, we find that it is quite difficult for people to access the relevant information, especially those who lack awareness and/or the motivation to conserve energy. From our observations, the main reason for this is that most local governments have been deficient in providing platforms with clear and integrated information, whether in the form of a dedicated phone line or a website. As a result, it is difficult for people to clearly know which subsidies are currently available and which courses or activities are available and open for participation.

The public is the foundation of action for reducing residential energy consumption. The government also needs to formulate policies that reflect the perspective of the public. For example, people need to be made aware of the opportunities for energy conservation in their homes, how to take the steps needed to reduce energy use, whether subsidies are available to assist them and, if so, how to apply for such subsidies. If access to information is sporadic or if the available information is incomplete, the threshold for popular participation in energy conservation is effectively raised.

[5] The Energy Conservation Act is a project under the Bureau of Energy, Ministry of Economic Affairs. Each county government proposes protocols in order to apply for appropriations. This project is divided into three periods, starting from this year to 2019.

Conclusion: Local governments should establish easily accessible channels to information, and present the necessary information in a concise way and with transparent spirit.

BU 04

Manifesto VI

The Bureau of Energy of the Ministry of Economic Affairs allows local governments to implement the “Local Government Cooperative Plan on Residential and Commercial Energy Conservation”[6] by themselves with few limitations. Local governments can implement it freely, from developing the atmosphere for energy conservation to promotions of relevant plans.
However, with the central government allocating all responsibilities for planning energy conservation to local governments, several problems have arisen:

1. Local governments are unfamiliar with the issues of energy conservation, and the performance of energy conservation among different local governments varies widely. For example, under the category of “Localized Means of Energy Conservation”, a few local governments have proposed programs for general residences, such as subsidies on heat pumps and diagnoses on residential energy consumption. Nevertheless, most local governments simply have not developed such programs.
2. Scattered resources lead to poor results. For example, efforts around "Building the Atmosphere for Energy Conservation”[7] were scattered in various places, resulting in few people knowing about the "Local Government Cooperative Plan on Residential and Commercial Energy Conservation". Further, the "Atmosphere of Energy Conservation" is a perceptual indicator. Local governments should avoid proposing inflexible data targets. Otherwise they will fall into a trap of reviewing details in KPI reports.

While energy conservation plans do need to reflect different social patterns, geographical environments, cultures, histories and other factors, the Bureau of Energy should provide local governments with more assistance in some areas, such as building up the capabilities of energy governance to ensure that energy conservation can be implemented. Furthermore, the central government should develop a unified plan in some areas, especially for the development of channels for conveying information. In this way, the plan will be implemented more effectively and the level of public awareness can be increased.

Conclusion: Where climate change mitigation and adaptation policies requiring the concerted efforts of the central and local governments, the division of labor between different levels of government should be carefully planned.

[6] Not an official translation.

[7] “Building Atmosphere for Energy Conservation” is one of the four major structures in the plans of local governments. However, the general public has failed to understand the importance and influence of energy conservation at present. Most people have the concept of energy conservation is only "turning off light and turning off air conditioner." Therefore, the implementation of this item should be reviewed deeply and carried out in an acceptable method to the general public. Government should not merely use subsidies and slogans to promote energy conservation in a top-down approach, but should plan and implement systematically which is like handling a brand in the long term. For example, the successful case of shaping the atmosphere for the Universiade in Taipei, which demonstrated that Taiwan has the capabilities required for such campaigns.

"Local Government Cooperative Plan on Residential and Commercial Energy Conservation" requires local governments to form "Dedicated Agency" for the plan. Most local governments responded to the call by appointing an existing department (mostly Economic Development Department) to conduct the whole plan. The appointed department would invite related divisions to form a working group, which is used to coordinate the plan and assign projects.

However, we noticed that the approach might lead to 3 problems,

1. The appointed department doesn't have enough manpower to handle a massive additional program.
2. The sub-projects assigned to different departments decentralize the resources.
3. It's difficult for departments to align their projects towards the coordinated goal.

For example, the local government websites for energy conservation promotion haven't presented overall information of the projects and sub-projects. Details regarding subsidies and consultation have been scattered on individual websites of each departments. If citizens tried to acquire information of ongoing projects, they must study through the entire action plan, then search for news related to each projects. The situation left citizens with little motive to take part in local governments' energy conservation programs.

The energy conservation program would probably be better organized and implementable if the appointed department can set up a responsible unit with sufficient manpower and budget to take in charge, rather than leaving the authority unclear with small sub-projects.

Conclusion: Local governments should put energy conservation policies in a higher priority, set up a genuine "Dedicated Agency" with necessary resources.

Transportation

TR 01

Manifesto VII

In promoting the private charging infrastructure for electric vehicles, the government did not consider and review the existing regulations thoroughly, thus failing to effectively implement its new policies.

The Executive Yuan (executive branch of the Taiwanese government) is trying to achieve the goal of "Electrifying All New Vehicle Fleets by 2040" through the Air Pollution Control Act (APCA). Meanwhile in January 2018, the Ministry of Economic Affairs agreed to subsidise 50% of the cost of setting up 3,310 electric vehicle charging stations (including private charging stations), in order to rapidly increase the number of charging stations. Based on these facts, we interviewed people who either already own or are interested in buying electric vehicles and found that the critical factor for their purchase decision was the accessibility of charging stations at home or at work to prevent the anxiety brought on by the lack of charging stations.

In the "Condominium Administration Act" (CAA) enacted by the Ministry of the Interior (MOI), there is no mention of who is to decide on the setup of charging stations. In addition, most residents worry that the charging stations could damage building walls, the basic infrastructure of the condominium, or overuse the electricity supply of the building. As a result, many are fearful of installing charging stations in their condominiums.

The MOI believes that such matters should be addressed by the existing regulations of each residential community and decided by the stakeholders in the community, instead of being regulated in the CAA. However, a number of businesses believe that the regulations on the installation of charging stations should be included in the CAA. In particular, they want an amendment to the CAA regarding the installation of the charging stations that will go into public buildings or facilities and shared parking lots. We agree with this amendment and believe that it is within the residents' rights to install charging stations if they wish to. In addition, the individual users pay for the electricity used by their charging stations; thus, it should not require the consent of the community. Referring to Article 13 of CAA, the installation of charging stations should bypass the consent of the community and stakeholders and after a careful evaluation of the safety of the system, the charging stations can be installed.

Conclusion: The execution and implementation of any climate change policy should be based on a thorough and comprehensive plan, and the existing regulations and laws should be thoroughly reviewed to see if they limit or conflict with the goals being set.

TR 02

Manifesto III

In its "Air-pollution Prevention Article," The Executive Yuan indicated that "all official cars and buses should be run with electric motors by 2030; all new motorcycles by 2035; and all new cars by 2040." However, all policies and regulations related to electrical vehicles are currently focused on offering positive incentives. We believe that promoting electric vehicles also requires efforts to

increase income and a regulated way to assist the transition from gasoline-diesel vehicles. That is, the transition requires some negative consequences for users of gasoline-diesel vehicles, as well as positive incentives.

Currently, there is an air-pollution fee, which is charged along with the usage of gasoline and fuel tax (gasoline fee), which is included in the road usage fee. However, there is not yet a tax aimed at conserving energy or reducing carbon emission, nor is there an anti-air-pollution tax based on the actual level of pollution. The government has set up a standard for gasoline- vehicles emission limits and provided a 'Green Vehicle Guide' website with lower emission, lower noise and lower energy consumption vehicle suggestions for the public to refer to when purchasing a new car. We suggest that the government add a category for 'extreme pollution emission vehicles' to display vehicle types with higher emission levels or higher energy consumption levels so that customers can avoid choosing such vehicles. At the same time, we also suggest that carbon emissions and the energy consumption level should be reflected in the tax for each vehicle type, thereby increasing the tax rate for customers who choose vehicles with higher emission or energy consumption levels.

From the perspective of supply, we believe that if the target is to reach the aim of the Air-pollution Prevention Article, there need to be more 'sticks' for Taiwanese vehicle manufacturers to reduce the sales of gasoline-diesel vehicles. We suggested that before completely forbidding the sale of gasoline-diesel vehicles, the government should regulate the ratio of gasoline-diesel to electric vehicles sold, with manufacturers who fail to meet the ratio being allowed to purchase credits from others to compensate for their 'sales void.' Manufacturers who fail to meet the ratio would face reductions in future production allowances. Such a regulation would serve to push Taiwanese vehicle manufacturers towards the production of lower carbon vehicles.

Conclusion: The Government should introduce more 'sticks' to hasten the transition to electric vehicles. The government should not make the mistake of using 'carrots' alone, perhaps in order to avoid losing potential votes.

TR 03

Manifesto X

Through our interviews with electric car owners, we found that the government has gradually installed EVSE (electric vehicle supply equipment) for electric cars. However, parking spaces with charging equipment are often not available, due to a lack of effective management, maintenance, and regulation. Although there are parking spaces for electric cars, they are often occupied by gasoline or diesel cars, with the result that e-vehicles users are unable to charge their cars.

Accordingly, we suggest that the government should facilitate the availability and periodical maintenance of EVSE in public parking lots. For instance, the government can refer to the practices of renewable energy promotion.[1] More specifically, the government can subsidize the installation of public EVSE at the beginning of electric car promotion. Once the number of installed EVSEs reaches a certain level, the subsidy policy should switch from the target of "installing public EVSE" to "selling energy accordingly" in order to promote proper management (For example: no parking for non-electric cars) and maintenance of EVSE.

[1] Refer to the Zero Emission Vehicle (ZEV) Regulation in California and Dual Credits system in China.

Conclusion: When the government promotes installation policies, it should consider the maintenance and management of facilities at the same time. In addition, over time it should switch the subsidization policy from encouraging installations to encouraging usage of the facilities. In this way, they would encourage not only high installation levels but also high levels of actual use of the facilities. In this way, the policy's goals would ultimately be realized.

TR 04

Manifesto III

To date, the major objective of public transportation policy has been to improve the attractiveness of using public transportation by, for example, increasing the number of routes or 'beautifying' the appearance of stations. The assumption has been that well-developed public transportation will make persuade people to shift from private vehicles to public transportation.

We feel that the authorities should put more emphasis on using 'sticks' to discourage the use of private vehicles. This would mean increasing the cost of using private vehicles through methods such as raising parking fees in public areas.

In our opinion, 'pull policies' (positive incentives) are not effective enough, on their own, to promote public transportation. Although people often resist 'push policies' (negative incentives or consequences) and they might limit the economic development of the vehicle industry in a temporary term, it is still necessary for the government to take the leading role in promoting public transportation and industrial transformation.

Conclusion: We recommend that the government develop a wider variety of 'sticks' so that it has a balance of 'carrots' and 'sticks' to use for the transition towards electric vehicles and greater use of public transport. The preference for 'carrots' may be due to a desire to ingratiate voters. Nonetheless, the required transformation is of vital importance and will require the determined use of both positive and negative consequences.

TR 05

Manifesto XI

Taiwan's public transportation system is well-designed in many ways. However, transport volume has not notably increased, nor has the market share of private vehicles obviously declined. Based on our interviews with several experts and scholars, it does seem that in some cases, such as the public transportation system in Kaohsiung, problems in design are the cause of low usage rates. The government in Kaohsiung did not take their population structure, existing patterns of use of local transportation and transportation habits into consideration; instead, the government spent a lot of money on constructing public transportation to achieve high transport volume. However, the actual transport volume has not met their expectations. We suggest that the design and promotion of public transportation should work through a step by step, stage by stage process, according to the theory of Public Transportation Studies. For example, according to the transport volume, urban areas should add Bus Exclusive Lanes first, add Bus Rapid Transit second, and add Light Rapid Transit third. During this process, people's habit of using public transportation can be gradually cultivated.

Conclusion: Government policy should reflect local patterns and habits in terms of public transportation use; further, the government should promote the new policy step by step in order to reach the goal of promoting public transportation.

TR 06

Manifesto I

Now, most public transportation in Taiwan are "encouragement-oriented" policies, or 'carrots.' For example, improvements to the existing public transportation system have led many to transition from private to public transport.

The government also subsides the purchase and use of electric vehicles. On the other hand, the government uses fewer 'sticks' or negative incentives, involving increasing the cost of high energy use or carbon emissions. Because of electoral pressures, such policies may be difficult to implement. Therefore, the government must raise public awareness of climate change and reach a consensus on the importance of mitigation policies. It is vital that the public understands the purpose underlying the government' s mitigation policies and is able to take a more farsighted perspective.

Conclusion: Awareness of climate change needs to be cultivated amongst members of the public through autonomous learning, social and citizenship education, and school learning, so that citizens will have the background knowledge required to understand the motivation and purpose of climate change mitigation policies. The support of an informed citizenry would allow the government to develop policies with an appropriate balance of 'carrots' and 'sticks' to achieve the sizeable reductions in carbon emissions that are required.

TR 07

Manifesto V

A number of studies[2] from government departments as well as the results of a questionnaire designed by the Transportation Group of TWYCC have clearly indicated that the main reason for the public' s use of private transport is "higher convenience". Therefore, improving the convenience of public transport is essential. The main components of "convenience" would appear to be time, distance and information access. Therefore, it is recommended that the government should focus on how to reduce the time it takes to transfer (e.g. the WOW BUS[3], increasing the frequency of shifts), increase the ease of transferring between stations (e.g. more stations, shorter distances between stations, shelter from wind and rain), publicize the existing arrangements for seamless transfers, clarification of instructions during transport and so on. These strategies can indeed increase the convenience of taking public transport for people and encourage people to transition from private to public transport.

Conclusion: When the government is promoting a new policy, it needs to understand the concerns of the end users, and take their perspective as the basis for policy design. In this way, it will be possible to implement new policies more effectively and to better encourage changes in people' s habits.

[2] "Summary Analysis of Survey of Daily Transport Mode Used by the Public in 2016" which was announced by the Ministry of Transportation and Communications

[3] Currently, it is promoted in Taipei City, New Taipei City, etc., it is similar to a special bus, so that the public can raise the demand through the APP and raise numbers of people to participate in the same route. After meeting the qualification of route, people can take a bus with less parking station and fast travel to the destination at a specific time and at a specific place.

TR 08

Manifesto IV

There is a great rural-urban gap in public transportation development in Taiwan, with rural areas having much weaker public transportation systems. Because development in different rural areas poses different challenges, many factors should be considered when executing public transportation policies, and effective communication is of vital importance. According to our interviews and research, we found that there is often no effective informative communication platform in rural areas. As a result, many resources are wasted in executing policies. For example, the Government plans to provide its Demand Responsive Transportation System (DRTS[4]), primarily in 12 representative rural points. However, due to lack of an integrated information platform, Yilan County selected a low base bus as its transportation system which subsequently suffered damage because of rugged geomorphology. The county then solved the problem by introducing medium-sized buses. If there is a suitable platform to share such experiences with other areas, future problems in the implementation of DRTS will be reduced. That is, if an information communication platform can be established, policies can be executed more effectively everywhere. Therefore, we suggest that each rural government establish an effective platforms to exchange information with other areas and thereby improve the overall development and quality of rural public transportation.

Conclusion: Local governments usually independently process and promote new policy handed down from the central government. However, there should be effective platforms to allow communication between local governments so that they can refer to each other's experiences and create the best fit method to implement policies in their own areas.

TR 09

Manifesto VII

The transportation sector is the 3rd largest carbon emitter among all sectors in Taiwan. According to data from the Ministry of Transportation and Communications (MOTC), small passenger vehicles account for 50% of all carbon emissions from this sector. If we could increase the energy efficiency of small passenger vehicle use, it could greatly reduce carbon emissions from this sector. Car-sharing could play an important role in reducing transportation carbon emissions.

In our research on car-sharing, we found that the low public acceptance of car-sharing is primarily due to a lack of information and concerns about safety (for both the drivers and the riders). Currently in Taiwan, there are no relevant laws and regulations pertaining to car-sharing (e.g., when the drivers or the riders are in trouble during a car-sharing event, the revealing of their personal data and criminal history can help the chances of rescuing them). We believe that car-sharing is the most efficient way of using private passenger vehicles, lowering the need for car ownership and thus reducing the number of vehicles on the road, and fulfilling the riders' needs when there is a lack of adequate public transportation. Thus, we strongly recommend that the government establish more comprehensive regulations and tracking mechanisms on car-sharing to ensure the safety of car-sharing participants.

Conclusion: The government should implement more comprehensive regulations to ensure the safety of riders using car-sharing, in order to more efficiently use existing passenger vehicles, lowering the need for car ownership and thus reducing the number of vehicles on the road, and fulfilling the riders' needs when there is a lack of adequate public transportation.

[4] Demand Responsive Transportation System, DRTS, is an elastic transportation carrying service for low population density rural area.

Agriculture

AG 01

Manifesto V

Council of Agriculture, Executive Yuan, R.O.C.(hereinafter referred to as the COA) has implemented the policy-based programme "Developing the Indicators of Meteorological Disaster Risk and Disaster adaptation strategies for Agriculture and Forestry"(hereinafter referred to as the Agriculture and Forestry Disaster prevention programme) since 2016. It is hoped that this programme prevent disasters through agricultural meteorological tools, improve the past passive disaster relief and collocate providing pre-disaster prevention tips and post-disaster agricultural insurance to build a complete disaster prevention system.

The COA wants to assist farmers in making adaptation decisions by promoting agricultural meteorological tools. If farmers can use the agricultural meteorological tools properly, they should be able to reduce the losses caused by climate change. However, after actually interviewing the farmers, it is found that the farmers had not used or heard of the agricultural meteorological tools, such as the disaster warning APP and the early warning system for crop disasters, and even had not tried the course of the famers' academy and agricultural insurance.

Conclusion: The agricultural climate adaptation tools and information that the government wants to promote cannot be effectively communicated to farmers, so more communication channels or mediators need to be created.

AG 02

Manifesto X

The Agriculture and Forestry Disaster prevention programme is a four-year programme. Although in this programme there have been 130 agricultural meteorological stations planned and set up so far, there will be no budget for maintaining these stations if the application of future programme funding is not successful. If there is no budget for maintaining the stations so that the equipment of the stations fails to function, the collection of meteorological data will be suspended.

Conclusion: The agricultural meteorology and disaster prevention programme should be recognized as infrastructure and supported by long-term stable funding to be implemented sustainably.

AG 03

Manifesto VIII

The agricultural and forestry disaster prevention program implemented by the Council of Agriculture (COA) aims to facilitate innovative technology research to address disaster subsidies and promote agricultural insurance policies. The project is an inter-departmental program, especially for agro-meteorological information. For example, the COA's official LINE account has a Crop Disaster Notification derived from the Agricultural Meteorological Report for different crops. However, the information on these platforms is not updated frequently, and it is only for specific crops, such as pears, rice, and shallots, with no information on other fruits and vegetables.

In our interviewers, farmers said that they relied on alternatives to the Crop Disaster Notification for information on the weather. They mainly use Facebook's "Instant Weather Forecast" fan page rather than the official weather forecast, because they feel the weather forecast from this page is very accurate, allowing them to prepare appropriately for upcoming weather events.

There are also civil society groups who design related agricultural climate services. When we interviewed the civil society groups, they referred to examples of farmers who were able to avoid disaster because of receiving accurate meteorological information. Therefore, the government may not currently be the leader of information transmission. Instead, it might better serve as a coordinator for non-governmental organizations or civil society groups.

Conclusion: The government should optimize the existing channels of information and data-user interfaces. It can try to facilitate the spread of accurate information by coordinating non-governmental organizations or groups.

AG 04

Manifesto VI

A wide range of weather forecasts nowadays makes it difficult for farmers to know what to expect from the weather and to prepare accordingly. Currently, the weather forecasts focus on particular counties, towns and cities, making it is hard to meet the needs of smaller farming regions. Often, the forecasts also cover relatively large time periods. If the wide temporal and spatial range of forecasts could be narrowed down to shorter periods and smaller areas, this information would allow farmers to plan their activities more efficiently. Some farmers will make use of their non-farming time to make deliveries or set up market stalls . Therefore, the decision of whether they should go to work on the farm or not is very important.

For example, one farmer, Mr. Yang, told us that farmers count on the weather forecast to decide how to allocate their time. If the weather forecast predicts rain, then instead of going to farm, they would work on other tasks. When forecasts are inaccurate, farmers may thus suffer wasted or misdirected use of their time.

Conclusion: Downscaling of climate information and weather forecast is benefited to planning and take action on climate mitigation or adaptation more efficiently.

AG 05

Manifesto IX

In 2018, weather-related disasters during the rainy season forced many farmers to rush to harvest their crops. Consequently, many farmers suffered great losses because they did not have enough rice harvesters to harvest crops in the available time. They were compensated for their losses according to the law. If the government can make the distribution of rice harvesters more efficient, the government can save the cost of compensation.

Further, under the existing compensation system, farmers who produce without owning their land are typically unable to receive compensation due to the difficulties involved in

applying.[1]

Conclusion: "An ounce of prevention is worth a pound of cure": A better distribution of farming instruments would reduce the need for compensation. Also, the compensation system should be reformed to make it more accessible to farmers who are not landowners.

AG 06

Manifesto VI

Natural Disaster Insurance for Agricultural Crops should be implemented in line with different local conditions and is should facilitate agricultural adaptation in response to climate change. However, our program is not doing so at present.

The existing "Natural Disaster Insurance for Agricultural Crops" is a trial program lacking a legal basis,[2] launched and reviewed by the Council of Agriculture. Part of the current criteria of claims settlement on insurance products is not in accordance with actual losses and local crop characteristics in different areas. Rather, assessments are usually based on general factors, such as wind speed and rainfall measured at observation stations. However, with a limited number of observation stations, the actual weather in a disaster region and the corresponding observation station can vary under the impact of local geographical features such as terrain or hydrology,[3] leading to cases in which, for example, the wind speed measured at the observation station does not meet the criteria for a claim settlement while the actual disaster loss in the disaster region does.

Ideally, natural local agricultural features such as the growth period of plants, hydrology, weather and the terrain at the site should be taken into consideration when criteria of claim settlement assessment are established to infer the gap between weather conditions at observation stations and disaster areas. Currently, climate and hydrological information at observation stations can be accessed and compiled from data available at the Central Weather Bureau, Irrigation Association and Council of Agriculture while actual weather conditions on agricultural land need more localized input. Nevertheless, our procedures for determining local weather conditions and training of professionals before purchasing insurance still lacks a clear norm.

Hence, three possible solutions are suggested to solve the problem of the gap mentioned above. First, assess whether to construct additional meteorological hardware in different agricultural regions. Second, invite experts from different professional fields[4] to evaluate the discrepancy of

[1] According to the fifth regulation of the Implementation Rules of Agricultural Natural Disaster Relief, most farmers are tenants who do the actual producing activities. They cannot receive disaster compensation because they do not have the required documents.

[2] The "Agricultural Insurance Act" is still in the legislative process.

[3] Assume that the observation station is located on flat land, at a distance of 1 km from both field A which is located in a valley and field B which is also situated on flat land. The actual weather condition between A and B might differ from the recorded weather at the observation station due to differences in the terrains.

[4] Possibly including: geotechnical engineers, hydraulic engineers, environmental engineers, agricultural engineering workers, employees of Farmers' Associations and Agricultural Research and Extension Stations as well as worker in the product marketing sector.

meteorological information between insured regions and the corresponding observation station. Third, clarify the business model and classification of various crops. With the above efforts, finally, make sure the claim settlement assessments fit local needs by composing a panel of experts to review the clauses.

Conclusion: An efficient integrated platform is needed among central authorities, financial and insurance practitioners, local industry and administrative divisions. In this way, the "Natural Disaster Insurance for Agricultural Crops" could be better adapted to local conditions. This would facilitate the use of market mechanisms to encourage effective adaptations to climate change.

AG 07

Manifesto VII

Recent years have seen an increase in the intensity and frequency of natural disasters along with a corresponding increase in the risks associated with agricultural management for farmers. It is no longer possible to protect the incomes and assets of farmers purely by relying on government-funded disaster relief. In recognition of this, the "Natural Disaster Insurance for Agricultural Crops" policy was established on a trial basis by the Council of Agriculture in 2015, in an attempt to reduce the business risks for farmers in the face of the challenges posed by climate change.[5]

In practice, some farmers pay more attention to "Farmer Occupational Injury Insurance"[6] than to crop insurance. In fact, many cultivators fail to record the ownership of farmland or rental agreements because they are unable to satisfy the legal requirements for being classified as a "Farmer,"[7] which excludes them from fundamental protection of personal security and precludes them from being covered when they become victims of occupational injury or economic loss.

Conclusion: In order to compensate interested parties for agricultural natural disaster losses caused by climate changes with subsidies that fit 'the reality on the ground', the legal terms and definitions relating the subsidized party must correspond to the same individuals suffering from loss and damage.

AG 08

Manifesto IX

Effective climate change mitigation within the agricultural sector depends highly on the actions taken by farmers. Thus, the climate change knowledge of farmers and the accessibility of information can influence the outcome of attempts to mitigate climate change. One of the famers that we conducted an interview with indicated that Taiwan Good Agricultural Practices (TGAP) is a policy with good intentions that are difficult to realize in practice. The main reason is the huge gap between the knowledge of the information that is required and the educational background of agriculture practitioners. It seems to us that this problem, along with the fact that much of the climate

[5] https://www.coa.gov.tw/ws.php?id=2504021

[6] In the past, so-called "Farmer's Insurance" actually referred to "Farmer's Health Insurance and Allowance", a farmer occupational social insurance, which only covered maternity benefits, disability benefits and a death subsidy, without coverage for occupational injuries. In order to improve the work safety of farmers, the Council of Agriculture has, since April 2017, entrusted its authority to local farmers' associations to launch the "Farmer's Occupational Injury Insurance,", using Labor Insurance programs as a model, with cash benefits available in case of injury, disability, medical care or for death subsidies.

[7] Article 5 of the "Farmer Occupational Injury Insurance Experimental Regulation."

change information used to develop the TGAP is outdated, has rendered the policy ineffective. We could not help but doubt the effectiveness of even promoting the latest knowledge of climate change to the farmers.

Mr. Su, another farmer that we interviewed, grew up in a family which could not support his studies and whose only career choice was farming. Su is familiar with policies that ensure his income, such as the "Old-Age Farmer Allowance" and the "Purchasing rice at guaranteed price" policy but has no knowledge of other agricultural policies such as "The Farmers' Academy" or of agricultural climatology. What he knows about farming is that it is hard work and that he earns very little. He knows nothing about the implications of climate change or the significance of climate change for farming and food security.

Conclusion: Policy making, information transfer, and actions against climate change should consider the diverse background of stakeholders and should not exclude anyone due to differences in education background, economic status, or class.

AG 09

Manifesto II

Data from the Council of Agriculture shows that the average age in the agricultural sector has been rising continuously. In 2014, farmers above 65 years old accounted for 37%,[8] and one-third of retirees at the age 65 are farmers. Mr. Hsu, a nearly 50-year-old farmer who has no heir, told us that three quarters of the farmers are over 70 years old in his neighborhood. The Council of Agriculture has established and promoted the Youth Farmer Counseling Platform to lower the age of farmers. Yet, the Taiwan Youth Climate Coalition Agricultural Team found that the effectiveness of the Youth Farmer Counseling Platform is very limited, and data shows that the average age of those who engage in agriculture is still increasing. We also interviewed civil servant of the local Agriculture Bureau, who interacted frequently with farmers. They believed that youngsters could not only learn more quickly and accurately, but were also more able to develop innovate plans for the agricultural industry. For example, the youngsters actively learned of new technology and new farming methods to adapt to climate change. Unfortunately, young farmers are quite few. Therefore, the priority is to speed up the pace of youth involvement in agriculture, in order to solve the issue of the aging rural population, and to adapt to climate change.

Conclusion: It seems easier for youth to face the challenges of climate change, so we hope that they can be persuaded to participate in climate change adaptation actions. At the same time, we also hope to appeal to youth to return to their hometowns and engage in the agriculture industry.

AG 10

Manifesto VI

The Farmers' Association is a juridical association whose competent authority is the Council of Agriculture, Executive Yuan. There are three different levels of the associations: national, municipal and township. The association's duty covers many areas, including promoting laws, demonstrating and instructing farming techniques, promoting high-quality plant seeds and agricultural mechanization, assisting produce keeping and processing, helping deal with insurance, preventing and

[8] Data on age, sex, and educational background of those above 15 years old, engaged in their family business of agriculture and animal husbandry.

assisting recovery from agricultural disasters, promoting rural tourism, etc. It functions as a small-scale cabinet for the agricultural sector..

According to the Farmers' Association Act, aside from the admission fee and annual subscription fee, the association's funds come from enterprise funds raised by various businesses, the agriculture promotion funds that should be reported to the Association (earmarked for specific purposes), the surplus from operating business, the income from the business commissioned by the government, and subsidies applied for according to related laws. The distribution of the surplus after settling the account at the end of the fiscal year is also regulated by the Farmers' Association Act.

However, under the current system, more resources might be requested if the Association participates in the transmission and promotion of agriculture policies pertaining to disasters. Although its contracted salary system is nearly the same as that of official workers, the Association is actually, in a way, not a governmental institution. Thus, most organizations take responsibility for their own profits and losses. Owing to the absence of additional income and maybe to an insufficiency of human resources, there is little incentive to carry out new policies.

On the other hand, farmers do not fully trust the Farmers' Association. Farmer Hsu, in one of our interviews, claims that he has never thought the Association helpful at all and that the Association often treats him in an unfriendly way when he goes there for business. Had the Farmers' Association actively sought to build trust with farmers, it might have developed the potential to become an institution promoting climate change awareness among farmers, and reporting farmers' difficulties to the government.

Conclusion: The government should determine whether the Farmers' Association is capable of playing a role in spreading knowledge and policies related to climate change. If necessary, better policies and competitive salaries might be important as incentives for these first-line agencies to carry out programs.

AG 11

Manifesto I

In 2017, one of the interviewees of TWYCC's Agriculture Department suffered from several natural disasters. Among these disasters, the most serious damage occurred at the beginning of June and resulted from flooding. From the viewpoint of the interviewee, it is hard to forecast natural disasters accurately because there have been too many natural disasters in recent years. Thus, under extreme climate conditions, the correct approach is to raise the buffering power or resiliency of the environment and agricultural lands. This will allow agricultural lands to maintain their original characteristics in the face of extreme weather events, at least to a certain degree of severity. That is, in an agricultural ecosystem with sufficient assimilative capacity[9], the landform, biota, biological diversity, and plant health will be able to recover from damages inflicted by, for example, a typhoon.

[9] That is, where nature or the ecosystem can sustain large negative impacts from internal or external sources.

The interviewee suggested that agricultural ecosystems possessing assimilative capacity could be cultivated by following the following guidelines:

1. Avoid development of environmentally sensitive areas, such as water sources, land slopes steeper than 15 degrees, fault zones, and geologically sensitive areas.
2. Pay attention to water and soil conservation in the process of development, and preserve the gentle landform of agricultural fields, or build terraces.
3. Preserve soil surface covered by organic matter. Organic matter, such as disposable rice straw and rape flower, is defined as agricultural material providing protection for the soil surface or nutrition for the ecosystem.
4. Preserve the soil structure composed of organisms and do not arbitrarily plough or farm such soil.
5. Preserve robust agricultural ecosystems and do not arbitrarily use pesticides, such as herbicides, insecticides, and rodenticides.
6. Fertilize properly[10] and do not overuse fertilizers, including artificial fertilizers and organic fertilizers.
7. Lower the amount of surface runoff and boost the amount of water seeping into the soil.

There are necessary conditions for successful agriculture, such as holding the cost of agricultural lands below a certain level, agricultural technologies suitable for local environmental conditions, and background knowledge in agriculture. There are even more such conditions for organic agriculture. If these conditions, such as land, environment, knowledge, finance, social networks, are not adequate, it is inappropriate to undergo organic cultivation. We should think further about how to make agricultural cultivation sustainable.

Conclusion: If agricultural employees hold specific views or perspectives on the environment and disaster prevention, it will be more helpful for the government to practice, correct, and adjust policies. We take the interviewee as an example. The interviewee thought environmental resiliency should be raised. According to the interviewee, when conditions are inadequate, we should still think deeply about how to practice and adjust our actions within the range of feasible options.

[10] The agricultural museum of the Council of Agriculture mentions that fertilizing properly does not necessarily mean reducing fertilizer use, but rather fertilizing in the right way. In other words, we should give what the land need, how much the land needs, and not give what the lands does not really need. This will help to avoid waste of resources and environmental destruction caused by overuse or improper use.

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