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Abstract

The country's irrigation systems have had a long history of recovering maintenance cost from farmers. The Free Irrigation Service Act of 2018 was a radical departure from this policy. Based on examining secondary data, and primary information from key informant interviews and focus group discussions, this study conducts a preliminary assessment of the policy change.

The assessment finds that the main benefit to farmers from free irrigation is the savings from paying the ISF in the case of NIS; and the subsidy for O&M in the case of CIS. The overall level of O&M may have increased despite the likely decline in O&M subsidy for NIS. However, while beneficiaries of free irrigation are poorer than average, a large majority of potentially beneficiaries are non-poor; to achieve equity objectives, targeted transfers are probably superior to in-kind transfers such as free irrigation.

Several recommendations are provided: 1) Continue to pursue IMT within the context of free irrigation for both NIS and CIS, based on minimum maintenance for NIA maintenance, and transparent maintenance standards for both NIA and IA; 2) Provide for sustained and increasing O&M subsidy, but make it available only on a performance basis; 3) Explore water-saving as a performance criterion in O&M subsidy; 4) Transform NIA into a service providing agency specializing in technical assistance to IAs, contract design, and performance monitoring; 5) Introduce a mandatory review comparing FISA with other social assistance and social protection schemes in achieving equity objectives.

Keywords: irrigation service, irrigation subsidy, cost recovery, operations and maintenance, participatory irrigation management

Assessment of the Free Irrigation Service Act

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1. INTRODUCTION

Historically, the Philippines had been implementing a policy of cost recovery for the operations and maintenance (O&M) of its irrigation facilities. In national irrigation systems (NIS) managed by the National Irrigation Administration (NIA), farmers using irrigation service are charged an irrigation service fee (ISF). Meanwhile in communal irrigation systems (CIS), associations of water users or Irrigators' Associations (IAs) would typically collect an ISF among themselves to pay for O&M of the CIS; moreover, NIA also collects fees from IAs to amortize the capital cost of the CIS.

The cost recovery policy was repealed on February 2018, when President signed into law RA 10969, the Free Irrigation Service Act (FISA). The law exempts most members of IAs in NIS from paying the ISFs. It also provided a subsidy for operations and maintenance of CIS. Only farmers cultivating more than eight ha are required to pay ISF. Moreover, for farmers cultivating 8 ha or lower, all unpaid ISF and corresponding penalties owed to NIA are condoned; for IAs, all loans, past due accounts, and corresponding interests and penalties owed to NIA were likewise condoned. By 2019, the budget for funding free irrigation for farmers reached Php 2.6 billion (DBM, 2019).

In 2015, NIA income from ISF was about P1.8 billion, representing significant cost recovery on irrigation maintenance. Waiving the ISF effectively transfers income to farmers equivalent to the amount of the ISF (with associated interest and penalties for past due payments). On the other hand, there is a real cost for irrigation maintenance. The FISA shifts the burden of paying irrigation O&M from direct users, i.e. farmers, to the public treasury, funded by taxpayers, effectively establishing an in-kind transfer scheme.

The study aims to evaluate the policy of making irrigation service free for farmers. The study findings may lead to a long term re-assessment of the FISA, and potentially lead to future reforms in terms of budgeting, cost recovery, and management of scarce water resources. Specific objectives of the study are as follows:

1) Describe the implementation of the free irrigation policy at the level of budget, National Irrigation Administration (NIA), and irrigators' associations (IAs)
2) Evaluate the free irrigation policy in terms of its impact on farmers, the irrigation sector, and public finances
3) State recommendations for irrigation service pricing in the Philippines.

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2. HISTORY OF FUNDING OPERATIONS AND MAINTENANCE

2.1 Early history until 2000

Since the Irrigation Act of 1912 (Act No. 2152), charging irrigation water users for O&M has been the standard policy by law. Implementation of this policy has always been problematic; after decades of implementation, an assessment by World Bank for NIS in the early 1960s found that maintenance for irrigation and drainage the country was mediocre; water charges were unrealistically low; and many farmers have not paid even these low charges.

From its founding in 1963, NIA had been limited to managing large irrigation systems and recovering cost from users of these systems. With no other agency willing to pay the cost of CIS maintenance, cost recovery was practiced by CIS IAs by default. It is difficult to gauge the historical experience of CIS users with cost recovery, in the absence of records of system performance and fee collections.

In 1974, PD 552 granted NIA broader powers and authority to undertake program-oriented and comprehensive water resource projects for irrigation purposes. Subsequently, NIA successfully implemented an upward adjustment of the irrigation fee rate. The practice of charging for irrigation service remained in place until the Estrada Administration. On 1998, President Estrada ordered a suspension of NIA collections. However, there was no alternative funding for O&M; hence, six months later, the ISF was reimposed under a socialized structure.

From the outset, the Philippines' irrigation program had been based on the principle of participatory management. Beginning in 1999, NIA began to implement an irrigation management transfer (IMT) program in NIS. IAs are motivated under the IMT program by various compensation schemes, differentiated into four models:

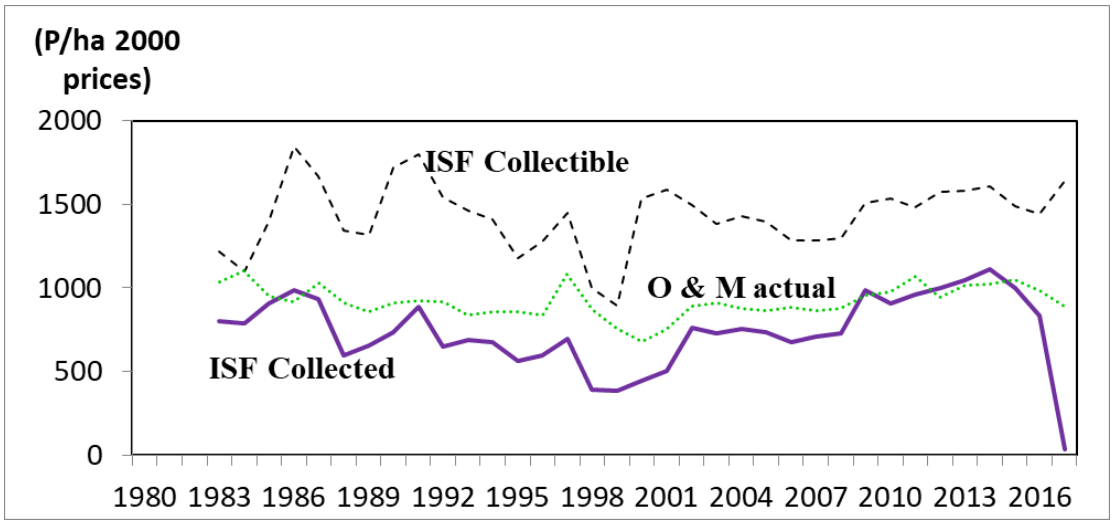
> Model 1: Maintenance of canals delegated to IAs; IA is compensated based on canal area maintained and existing labor rate.
>
> Model 2: Turnover of management of lateral canals to IAs; the latter receive 30 percent of the ISF collected.
>
> Model 3: Turnover of management of main and lateral canals to IA federation; the latter receive 30 percent of ISF collected.
>
> Model 4: Complete turnover of NIS to IAs; IAs pay only an annual rental fee (equivalent to 75-100 kg palay per ha).

2.2 Recent trends in O&M

Despite NIA having the mandate of cost recovery, it has usually needed an annual subsidy for operating expenses (Figure 1). O&M actual expenses is typically higher than ISF collections (except briefly in 2011-2014).

Note that collectible ISF is usually in excess of O&M expenditure, i.e. had ISF been collected properly, O&M cost would have been fully recovered from water users. Unfortunately, NIA has been institutionally encumbered from achieving full collection, for the simple reason that it could not exclude non-payers from irrigation service. The best it can manage is to attach a lien on the delinquent farmer's land, which is of concern to the farmer only in case he or she wishes to sell or convey the land.

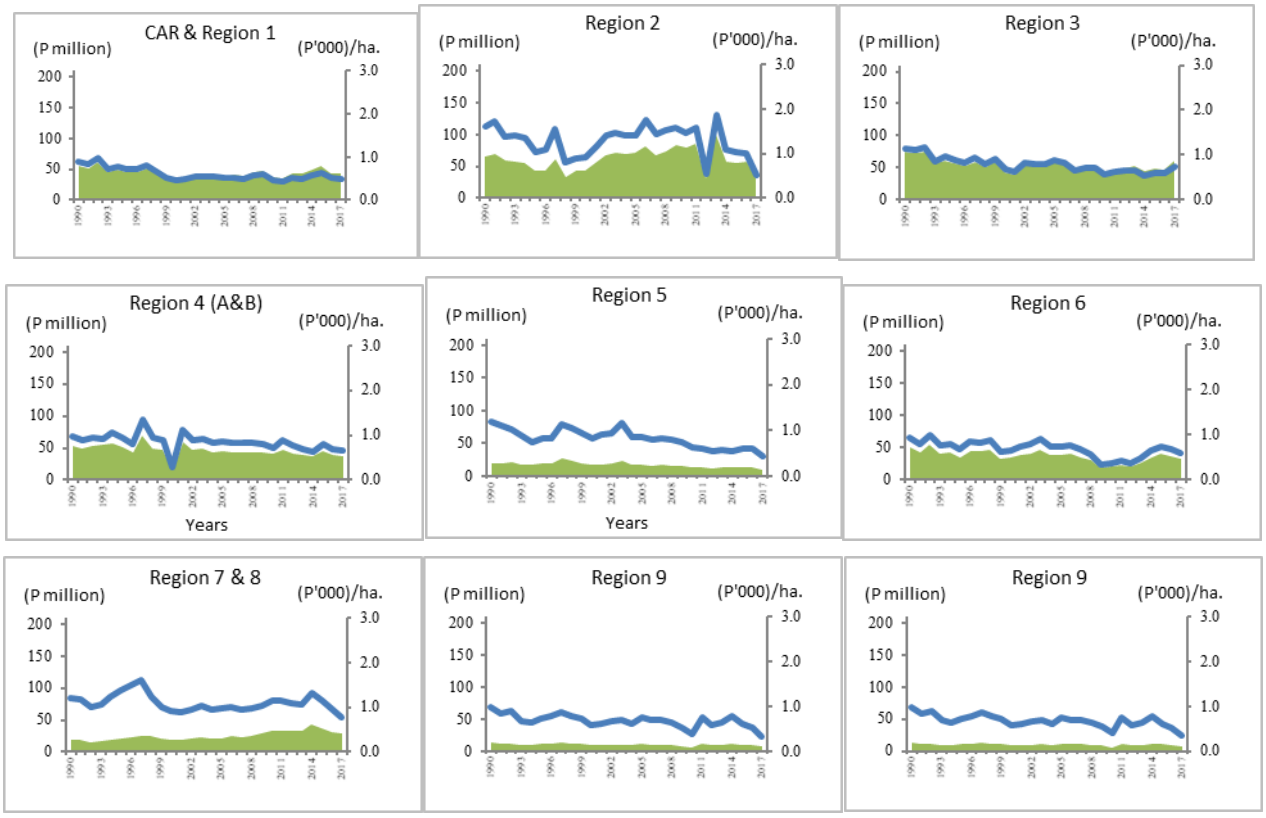
Figure 1: Trends in the actual cost of O&M of firmed-up service areas, ISF Collected of NIS, 1983-2016



Source: NIA SMD (various years).

A breakdown of real O&M expenditures for NIS and CIS by region are shown in Figures 2a and 2b. With few exceptions, total O&M expenditures, as well as expenditures per ha, have generally been on a downtrend, both for national and communal systems. The O&M per ha are now generally below P1000 at 2000 prices for NIS and much lower than P500 for CIS.

Figure 2a. NIS Real O&M Expenditures and O&M per ha (2000 prices), 1990-2017



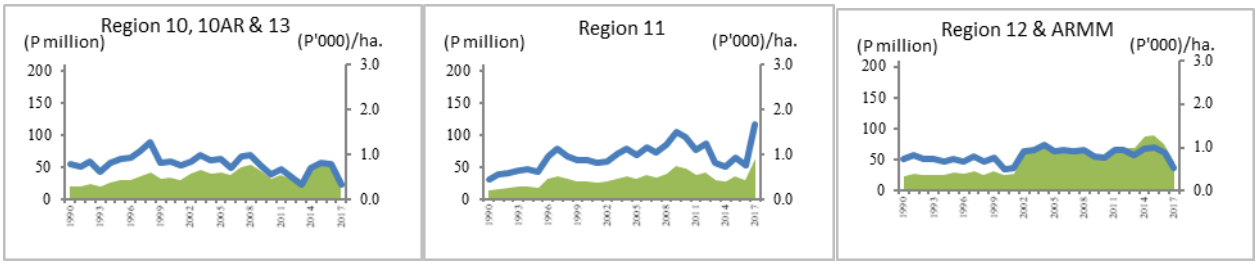
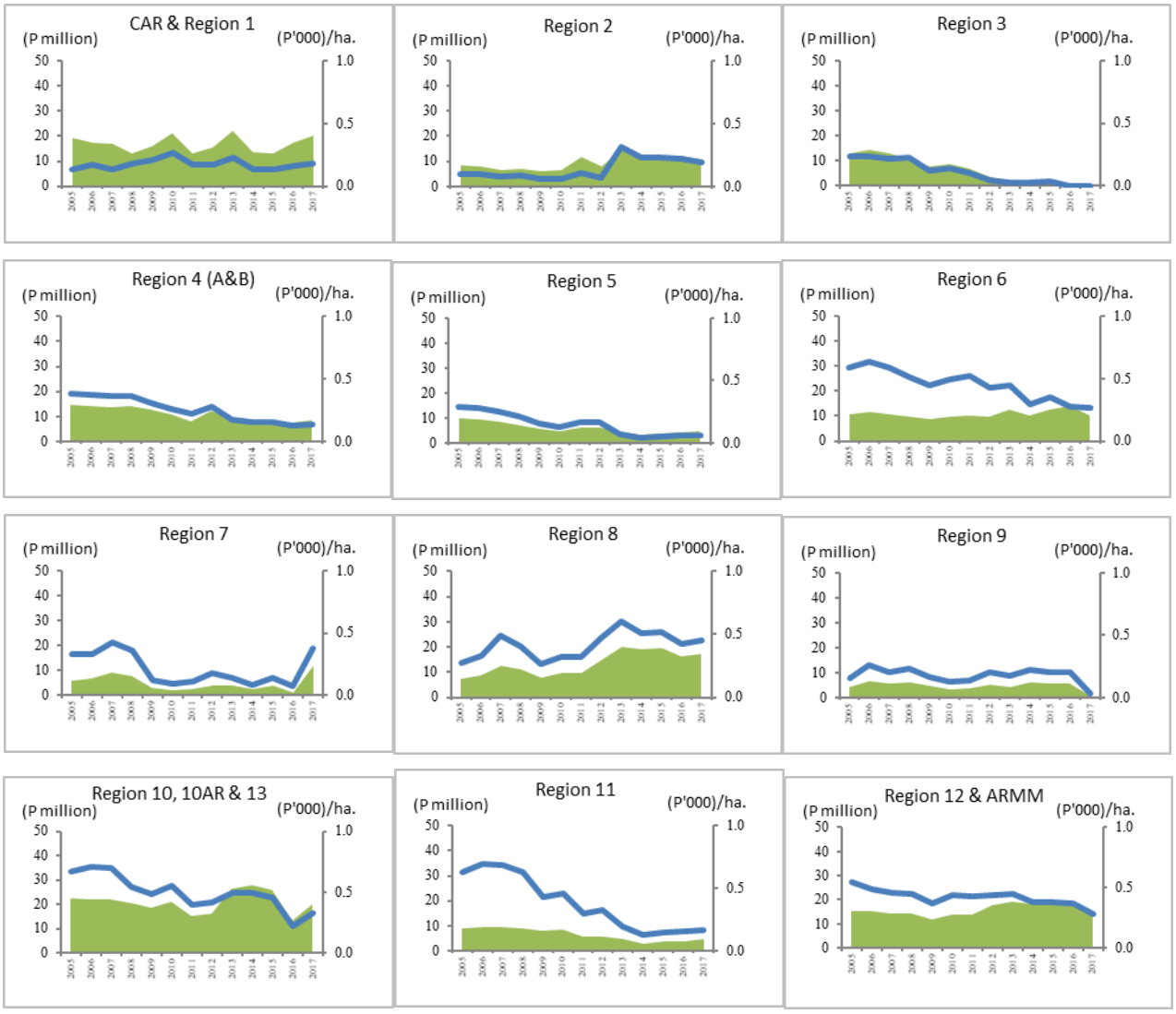


Figure 2b. CIS Real O&M Expenditures and O&M per ha (2000 prices), 2005-2017



Real O&M Real (P Mn) O&M/SA (P'000/ha)

Sources: NISPER, NIA-SMD, various years.

Under-resourcing of O&M has had deleterious long term consequences for the country's irrigation systems. David (2009) reported the rapid deterioration of the gravity irrigation system service area in the Philippines. The deterioration rate of about 70,000 hectares per year in the total NIS and CIS service areas during the pre-AFMA years (1992–1996) earlier reported by David (2003) had increased to about 134,000 hectares per year during the post-AFMA years of 1998–2004 (David 2008, 2009). This trend accounted for the very slow annual rate of increase of only about 10,000 hectares per year in the actual NIS and CIS service areas. This is in spite of massive efforts of rehabilitating an average of 124,597 hectares per year and constructing new irrigation facilities at 19,285 hectares per year during 1995–2005.

Ella (2015) reported similar findings. He noted that the net increase in total irrigated areas from 1985 to 2014 is only 294,939 hectares or just 10,170 hectares per year. This rate increased for the period 2009-2014, showing a net increase in total irrigated areas of 168,130 ha or 33,626 hectares per year. However, for the same period, new area generated is only 224,316 ha and total area restored is 298,840 hectares. The sum of new areas generated and areas restored minus actual irrigated areas for the same period showed total areas which deteriorated to be 355,026 hectares or 71,005 hectares per year. Despite huge irrigation investments, the data showed that the rate of deterioration is faster than the establishment of new systems.

Notwithstanding O&M problems, the current administration has doubled down on the President's campaign promise for free irrigation. It suspended ISF again in 2017; provision was made in the 2017 budget for government funding of O&M, in preparation for passage of a free irrigation law by Congress the following year.

2.3 Implementation of free irrigation policy

2.3.1 Preparatory phase

The NIA Board of Directors through Resolution No. 8396-17 series of 2017 has approved the Guidelines on Free Irrigation Service provided in NIA Memorandum Circular No. 13, series of 2017. According to the guidelines, for NIS, the IAs will be compensated based on the length of canal section transferred to them by NIA for maintenance. The equivalent of one (1) canal section shall be: lined canal = 3.5 km of earth main or lateral canal; lined canal = 7.0 km of concreted main or lateral canal. For each canal section, the lA, after satisfactorily complying with its maintenance obligations stated in the contract, shall be paid Pl,750 per month for a maximum of six (6) months in a year. For operations-related responsibilities, the IAs/Federation will be paid P150 per ha per cropping of irrigated and planted areas.

For CIS, NIA will stop collecting amortization and equity payments from farmers and/or IAs; this policy also applies for small irrigation systems (SIS) pump irrigation systems (PIS), including shallow tube wells (STWs), and small reservoir irrigation systems (SRIS). For projects with local government units' (LGU) participation, the equity requirement from the concerned LGU will be maintained.

IAs, as part of their internal policies, may collect additional amount from members on top of the regular dues (membership fees, annual dues, capital buildup, etc.) to cover or augment their O&M budget. Such collection must be approved by their respective General Assemblies. (A

subsequent amendment repealed this provision to allow the IA to decide freely whether or not to pursue internal cost recovery schemes).

2.3.2 Implementation after passage of FISA

The Implementing Rules and Regulations (IRR) of RA 10969 promulgated as MC 108-2018 of NIA (adopted by the NIA Board thru Resolution 8754-18 s2018, dated 18 December 2018). The IRRs cover the scope of free irrigation; condonation; O&M of NIS; O&M of CIS; collection and use of ISF; technical assistance to IAs/ISCs; and appropriations.

Scope: all farmers with landholdings 8 ha and below are exempted from paying ISF, for water derived from NIS, CIS, and other systems developed by NIA or other government agencies. This covers: reservoir systems; diversion systems; and pump systems. Exemption covers natural persons; corporate farms and plantations (regardless of size) are not covered.

Condonation: all past due ISF, amortization of CIS, interest due, and penalties assessed, owed by exempted persons, are condoned and written off from NIA's books.

O&M of NIS: NIA will be responsible for developing, operating, and maintaining NIS. In particular, the main facilities of an NIS, such as dams, reservoirs, intakes, headworks, diversion works, pumping stations, main canals, and large lateral canals, shall be managed by NIA.

Secondary facilities and structures of NIS, namely medium-size laterals, sub-laterals, turnouts, farm ditches, farm drains, and other terminal facilities, will be transferred to IAs/ISCs, or Federations of the same. The delegation will be done under the IMT program of the NIA, and will be formalized by an IMT contract.

For areas covered by IMT, NIA will provide a subsidy as follows:

1. *Operations subsidy* – Php 150 per ha per season
2. *Maintenance subsidy* – Php 1,750 per canal section every 45 days (maximum of six times per year). A canal section is equivalent to 3.5 km length of canal for earth canals, and 7.0 km of canal for concrete-lined canals.

IAs/ISCs are free to formulate policies to generate funds for their O&M, subject to approval of their respective general assemblies.

The scope of an IMT contract will be determined by a functionality survey, to be conducted annually and administered by Senior Water Resources Development Technicians, Water Resources Development Technicians, or Irrigation Development Officers of NIA. Every IMT contract will be subject to a seasonal performance evaluation.

Based on a sample contract found in Attachment 2 of the IRRs, an IMT contract may be suspended in case of non-compliance, and poor performance of the IA/ISC (as determined by performance evaluation). Upon suspension of contract, NIA takes over management of NIS. The sample provisions state: "When the IMT Contract is suspended the NIA through the IMO under the direction and supervision of the RIO shall take-over the management of irrigation operation and maintenance of the area covered by the IMT contract and the NIA shall have the option to hire 'contract of services' to complement its manpower in the management of the area covered by the contract."

O&M of CIS: The IMT policy governing NIS are adopted as well for CIS, according to Rule 7.2. Implicitly, IMT for CIS goes even further than in NIS, as in these smaller systems, the management of primary structures is also delegated to the IA.

Collection and use of ISF: NIA shall collect ISF and other payments due from non-exempt farmers and corporations. NIA may also enter into ISF collection agreements with the relevant IA/ISC to be covered within an IMT contract; such collections shall be used to augment the O&M subsidy received from NIA.

Technical assistance to IAs: NIA shall continue to be responsible for organizing IAs (or ISCs), as well as Federations of IAs at the system level; developing their technical and institutional capacity; and facilitate delivery of support services from other agencies.

Appropriations: funding for the O&M of irrigation systems will be obtained from the annual General Appropriations Act (GAA). The GAA will also fund: the irrigation systems development program; irrigation systems restoration, repair, and rehabilitation program; and support to operations.

3. RELATED LITERATURE AND STUDY METHOD

3.1 Review of Related studies

3.1.1 Options for water pricing

Post-war agricultural development in many developing countries involved massive investments, often funded by official development assistance (ODA); primacy of political over economic criteria; and low cost recovery, if any. In the 1970s, the World Bank and other agencies began to introduce cost recovery schemes in its irrigation financing. One of the primary motivations was generation of public savings, thereby increasing public resources for agricultural development. In fact, however, governments failed to implement thoroughly the various schemes, owing to political clout of farmers, and the lack of credibility of water providers owing to unreliability irrigation service. Various partial cost recovery schemes were instead implemented (Molle and Berkoff, 2007a).

A typology of water pricing schemes is described in Molle and Berkoff (2007b):

- *Area-based charge* – the ISF is charged per unit area served. This is often combined with adjustment for type of crop and other factors (season, location, etc.). Countries practicing this include Nigeria, Kazakhstan, Indonesia, Pakistan, Philippines, Vietnam, Japan.
- *Volumetric charge*: ISF is charged per unit volume of water delivered. This is practiced in several Middle East and North African countries, Australia, Southern Europe, and the United States.
- *Mix* of area-based and volumetric price: this is practiced in Spain, Colombia, Lebanon, and Morocco.
- *Quota and fixed charge*: the user is assessed a fixed charge up to a certain amount or quota; often implemented as a mix of quota, fixed charge, and volumetric price above-quota.

- *Market-based pricing* – unlike the aforementioned schemes, where prices are set by the irrigation service provider, prices are set by supply and demand in market-based pricing (e.g. auctioning off of water access).

Vietnam presents a valuable case study of a policy shift from water pricing to free water (Cook et al 2013). In 2008, under Decree 115, the government waived water charges for irrigation. The policy was intended to provide relief from high production cost to farmers and raise productivity. However, the government expected a farmer's counterpart, i.e. self-reliance for the management of tertiary canals and farm ditches. Favorable impacts of the policy were:

- Farm net income increased by an average of about $20 per household per year as a result of reduced payments for irrigation O&M.
- Irrigated area increased 3% - 5% in some areas. These increases were due to the fact that government provided a steady flow of income to irrigation and drainage management companies (IDMCs), allowing them to overcome the problem of under-collection of the ISF.

However, there were some negative outcomes:

- Government is slow to update cost norms of IDMCs, leading to underfunding and erosion of O&M.
- Making irrigation free effectively severs the link between water user organisations and the IDMCs.

In the case of Philippines, Fullon et al (2018) give a highly positive evaluation of FISA. NIA has shouldered a large share of the O&M activities, leaving the IAs free to undertake maintenance activities using the IAs' own funds – contrary to the notion that incentives towards O&M will be weakened by free irrigation. Moreover, the subsidy is conditional on IA effectiveness, incentivizing effort and co-investment in maintenance and repairs.

Finally, NIA (2017) itself prepared a position paper on free irrigation. The paper cited the following advantages of collecting ISFs:

1. The funding of O&M is better ensured;
2. Partnerships with IAs is better sustained;
3. Self-reliance of IAs is strengthened;
4. Management of the irrigation system is incentivized.

On the other hand, removal of the ISF has its own advantages:

1. Cost of production of farmers is estimated to decline by 3.4 to 6.1 percent;
2. NIA can better focus on planning, design, construction, restoration/rehabilitation, and O&M, of national irrigation systems;
3. NIA can better focus on strengthening and capacity building of IAs.

3.1.2 Scope of cost recovery and categories of maintenance

The scope of cost recovery through water pricing is distinguished by the type of cost to be covered. At a lower range of values for cost recovery, the aim is **partial to full recovery of O&M cost**. At an upper range of values for cost recovery, the aim is **partial to full recovery of capital cost**.

The maintenance level is another variable to be selected depending desired benefit stream from the asset. Alternative strategies for asset management are: *cyclical* approach; and the *regular maintenance* approach. The former is characterized by little or no maintenance input over time, rapid deterioration of the irrigation system, and sporadic rehabilitation to bring the system back to full functionality. The latter is characterized by regular maintenance inputs precisely to avoid rapid system deterioration; rehabilitation, if any, is done only after a prolonged enjoyment of irrigation services. The latter is likely to be a better approximation of an optimal asset management schedule than the former (Skutch and Evans, 1999).

Distinctions within regular maintenance approach can be made according to the following categories (Svendsen and Huppert, 2003):

- **Minimum maintenance**: fixed and low level of funding; after a short period of maximum performance, the irrigation service declines, first rapidly, then at a decreasing rate.
- **Pragmatic maintenance**: successively higher levels of funding are provided for upkeep; this lengthens the period during which maximum service is delivered.
- **Maximum or gold-plated maintenance:** a very high level of maintenance funding is sustained period after period; irrigation service is delivered at maximum level at virtually all times.

Under cost recovery of O&M, not only do government and users agree on cost-sharing – they will need to agree on the objectives and standards of maintenance. Securing users' agreement on these and other matters is part of participatory management, discussed in the following.

3.1.3 Participatory management schemes and free irrigation

Most gravity irrigation systems worldwide have relied on public investment for their initial construction. Management however can remain under government auspices, or it can be turned over to water users. The decision to turnover management is separate from the decision to charge for irrigation service, which leads to various options for pricing and management (Table 1).

The upper left (GG) and lower right (UU) quadrants are the polar opposites among the options; in the former, the government is responsible for both management and funding of O&M; in the latter, users are entirely responsible for management and O&M. Other combinations are found in the upper right (GU) and lower left (UG) quadrants: in the former, government manages the system but users contribute to O&M; in the latter, government contributes to O&M though the users are responsible for managing the system.

This schema, while useful, is a gross simplification of reality. In fact, there are gradations in terms of management responsibility (which tasks are performed by government and which by users) and cost sharing (between government and users).

The column on the right (GU and UU) represents the pre-FISA policy of cost recovery, with GU mapping to NIS, and UU mapping to CIS. Note that user contribution in NIS pre-FISA may not pay for O&M completely, i.e. government may pay for the balance of O&M cost.

Meanwhile the column on the left (GG and UG) represents the free irrigation policy. Clearly, UG maps to CIS; however, free irrigation in NIS may map to either GG or UG depending on the following:

- GG prevails when the NIS is not covered by an IMT program;
- UG prevails when the NIS is covered by an IMT program.

Table 1: Options for management and O&M payment

Who pays? / Who Manages?	Government (G)	Users (U)
Government (G)	(GG) Government manages system Government shoulders O&M	(GU) Government manages system Users contribute to O&M
Users (U)	(UG) Users manage irrigation system Governments contributes to O&M	(UU) Users manage system Users shoulder O&M

Note that there are gradations in degree of user participation and government contribution in UG: UG in CIS involves greater user participation than UG in NIS as the former exercises full management over the irrigation system, whereas the latter covers only secondary facilities and structures.

IMT remains the main institutional solution for irrigation management problems/poor system performance in the developing world. Earlier studies by World Bank on the outcomes and impacts of IMT indicated some favorable results from IMT. The literature on IMT and participatory management is far from a consensus on whether such policy generally succeeds or fails. The impacts of management transfer are rarely uniform or consistent across the various social, technical, and financial indicators the process is theoretically intended to effect.

A more prudent approach for research to focus on knowledge gaps about how IMT works and what factors contribute to IMT success (Mosse, 2003 and Rap, 2006 as cited by Senanayake, et al 2015). For instance, Araral (2011) has found that in NIS, IA-managed turnout service areas (TSA) are better-managed than NIA-managed TSAs, owing in part due to the perception of legitimacy: in the former, an offense is committed against peers; in the latter an offense is committed against an impersonal bureaucracy.

3.2 Method of the study

3.2.1 Research issues

The Statement of Policy of FISA emphasizes, among others, equitable access to opportunities as key strategies to raise the quality of life of rural areas. To this end, FISA provides for the reduction of production cost by waiving recovery of irrigation cost from farmers. Implicitly, the FISA deems it more **equitable** to transfer resources from taxpayers to provide cost savings for farmers.

It is however also an **efficiency** issue. First, the budget for irrigation may be even more efficient as an instrument for promoting equity by targeting it to a group more advantaged than the main beneficiaries of FISA, namely farmers (mostly planting rice) cultivating less than eight ha.

Second, any incentive effect from water pricing schemes (i.e. possibly economizing on water use) is problematic under free irrigation. Water saving must be a voluntary act on the part of farmers. Given that agriculture is the main user of the country's freshwater supply (82% according to FAO, 2012), and that this supply faces threats from climate change, the effectiveness of the policy for future water resource management needs to be carefully reviewed (Cabangon et. al. 2016).

Third, as an operational matter, free irrigation may complicate the management of irrigation systems. Based on past studies, operational concerns include issues such as: under-funding of O&M by government; and weakening of incentives to cooperate and actively participate in irrigation management on the part of users.

3.2.2 Research strategy

To address the aforementioned issues, the study adopts the following strategies:

1. Equity will be analyzed by examining the poverty and income profile of rice farmers, drawing on secondary data;
2. Efficiency in terms of operations and incentive effects will be explored based on field investigation and primary information, discussed in the following.

Data gathering was part of a broader evaluation study implemented by PIDS. To review, the respondents and study sites are as follows:

- NIA officers from the 7 Regional Irrigation Offices (RIO) and 14 Irrigation Management Offices (IMO), in the following provinces, covering all the regions of Luzon: 1) Laguna; 2) Ilocos Norte; 3) Cagayan; 4) Isabela; 5) Nueva Vizcaya; 6) Benguet; 7) Pangasinan; 8) Nueva Ecija; 9) Pampanga; 10) Camarines Sur; and 11) Occidental Mindoro.
- NIA officers in eight (8) IMOs and 6 RIOs in following regions and provinces of Visayas and Mindanao, respectively, Regions VI, VII, VIII, X, XI, XII; and Capiz, Iloilo, Bohol, Leyte, Bukidnon, Davao del Sur, North Cotabato and South Cotabato.
- Other government agencies found in National Capital Region (NCR), namely Central Offices in NIA and DENR;

Focus group discussions (FGDs) were also conducted among IA officers in NIS and CIS in the aforementioned provinces. During these FGDs a structured questionnaire was administered, with some questions related to implementation and impacts of free irrigation.

3.2.3 Study limitations

It should be noted that the reference period of the study was 2017, when free irrigation law had yet to be enacted, though the policy of waiving ISF in NIS, and amortization in CIS was already in place that year. Feedback from IA officers and government staff are therefore based only on preliminary versions of the law and are mostly based on opinions and subjective impressions. Moreover, the sample is very small and not based on random selection. Inferences made should be seen as hypothesis for further validation.

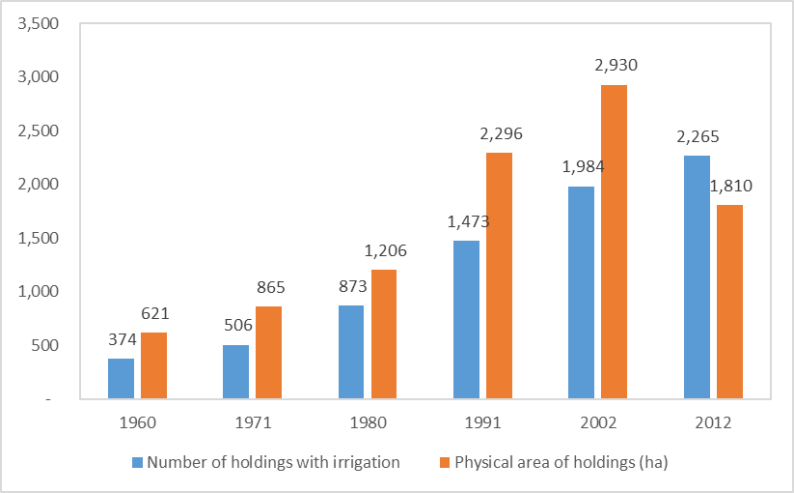
4. RESULTS AND DISCUSSION

4.1 Analysis of equity

Free irrigation has the potential to benefit millions of individuals.

Based on the Censuses of Agriculture (PSA, 2015), the number of irrigated farm holdings had been consistently increasing, from just 374 thousand in 1960 to nearly 2.3 million holdings in 2012, spanning 1.81 million ha (Figure 3).

Figure 3: Number and area of irrigated farms/holdings, 1960 - 2012



Source: PSA (2015).

The number of farmers cultivating these holdings is certainly less than 2.3 million, as some farmers may cultivate multiple parcels; however, the actual number is likely to be close to 2 million. A vast majority of these will be planting palay, and fall under the eight ha cut-off. In 2012, holdings of size 7.0 ha or below accounted for 77.8 percent of all holdings by area, and 98.2 percent of all holdings by number (PSA, 2015).

Free irrigation leads to only a small savings in palay production cost.

Earlier we had cited the position paper of NIA (2017), which in turn estimated of 3.4 to 6.1 percent as the share of the ISF in production cost of palay. It turns out that that estimate refers to *cash cost*. Table 2 shows the relative size of the ISF (paid both in-cash and in-kind), in 2017; 2013 estimates are compared to show that cost shares remain largely the same, despite the implementation of free irrigation in 2017. Nationwide, the ISF accounts for as little as 1.5 – 1.6 percent of cash cost (Region VIII), to as much as 6.8 to 7.3 percent in Region XII.

As a share in total cost however, the ISF averages just under 2 percent on average for the entire country. The share is lowest in CAR (1.2 to 1.3 percent), and highest in Region XI (2.9 to 3.0 percent). Making irrigation free will confer only a small savings in cost for palay farmers; based on 2017 estimates for cost of production and total production of irrigated palay, removal of the ISF will save palay farmers the equivalent of Php 3.4 billion.

Table 2: Share of irrigation service fee in cost of palay production by region, 2013 and 2017 (%)

	Share in cash cost		Share in total cost	
	2013	2017	2013	2017
PHILIPPINES	4.0	4.2	1.9	1.9
CAR	2.4	3.0	1.2	1.3
Region I	3.1	3.1	1.5	1.4
Region II	4.0	3.8	1.9	1.8
Region III	3.7	4.0	1.9	1.8
Region IV-A	4.1	4.4	1.9	2.0
Region IV-B	3.1	3.2	1.6	1.6
Region V	3.3	3.3	1.7	1.6
Region VI	5.4	5.6	2.3	2.2
Region VII	4.0	4.2	2.0	1.9
Region VIII	1.6	1.5	0.8	0.7
Region IX	3.6	3.6	1.8	1.7
Region X	5.5	5.7	3.0	2.9
Region XI	6.5	6.7	2.6	2.6
Region XII	6.8	7.3	2.6	2.6
Region XIII	6.9	6.2	3.2	2.9
ARMM	5.4	5.2	2.9	2.6

Source: PSA.

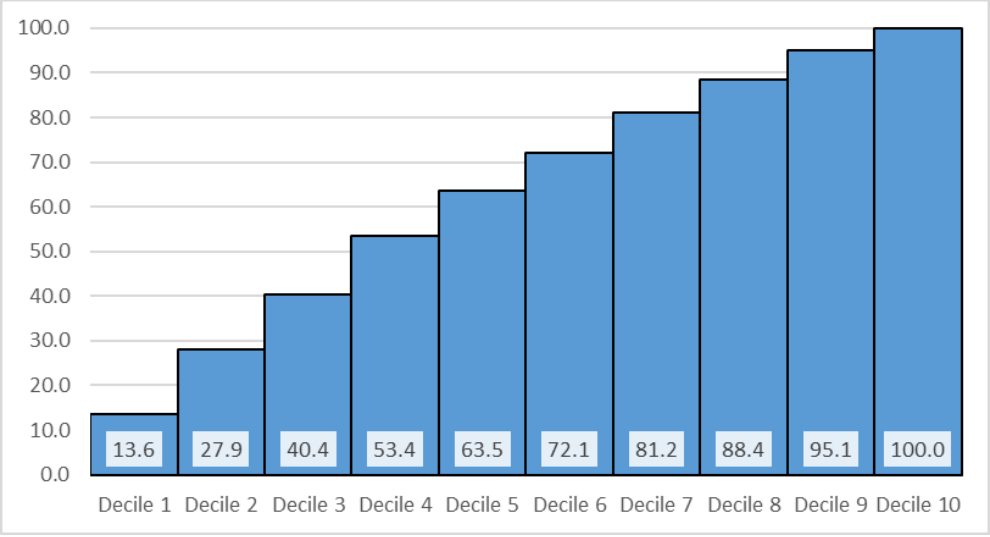
Palay farmers are poorer than the average household, but most of them are not poor.

Based on a merging of the Family Income and Expenditure Survey (FIES) for 2015, and the Labor Force Survey (LFS) of the same year (October round), about 4.1 percent of all households are identified as net rice producers (defined as those households whose heads identify their primary occupation as growing of paddy rice; and whose household crop income exceeds household rice expenditure). If farmers (i.e. net rice producers) are poorer than most of the population, then they would account for a disproportionate share of the number of poor households. In fact, palay farmers account for 4.8 percent of poor households – that is, poverty incidence among rice farming households is higher than average by about 17 percentage points. This implies on the other hand, that the share of palay farmers among non-poor households is 4.0 percent, almost identical to the share of palay farmers in all households.

Alternatively, Figure 4 shows the cumulative distribution of palay farming households by per capita income decile. As poverty incidence of families in 2015 was only 16.5 percent, the poor fall only among the first and second deciles. The first two deciles account for about 28 percent of rice farming households.

However, this implies that 72 percent of rice farming households are in the third to top deciles, who are clearly among the non-poor. Combine it with the fact that most palay farmers are below the eight ha cut-off, then clear an income transfer to palay farmers has a chance of 3 in 4 of benefiting a non-poor household. In short, Hence, free irrigation performs better at targeting the poor than a general transfer to the population, but not by much; far better are means-tested schemes for transferring incomes, e.g. the 4Ps Program.

Figure 4: Cumulative distribution of net rice producing households, 2015 (%)



Source of basic data: PSA (2015).

4.2 Results of FGDs and KIIs

4.2.1 National systems

In NIS, cost recovery was associated with distorted incentives, failures in ISF collection, and inadequate level of O&M.

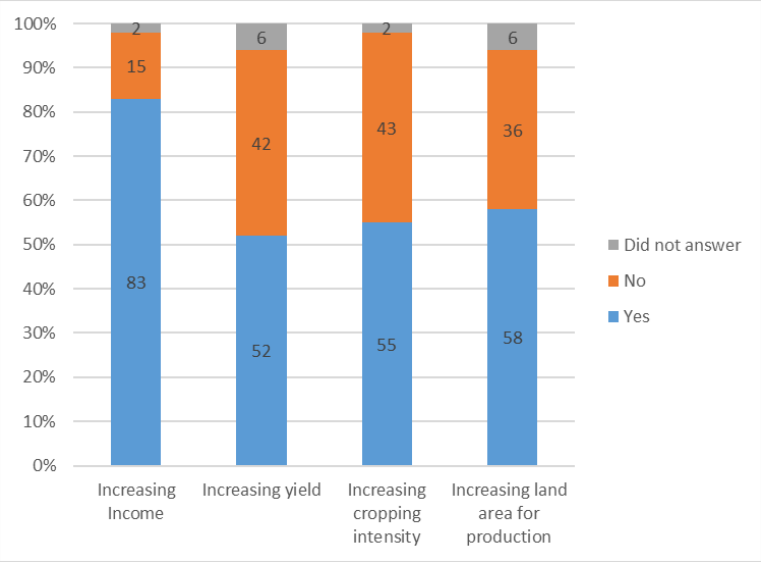
As discussed in Sections 2 and 3, the cost recovery scheme was fraught with problems. For one, area irrigated will often be under-declared in to reduce payment, as ISF is charged on a per ha basis. Another is that collection of ISF was typically below 100 percent, sometimes way below. As explained earlier, cost recovery is difficult when access to the service is not tied to the payment. According to the IAs, the top reasons for non-payment were: i) Personal difficulties of the IA member; ii) Insufficient water; and iii) Damaged state of irrigation systems. Reasons ii) and iii) imply that members are reluctant to pay ISF if they believe they are not receiving value for their money, i.e. an actual irrigation service.

NIS IAs viewed the level of O&M as being generally inadequate, consistent with the literature on the subject. Given political unwillingness to raise ISF rates, then government is also complicit given their failure to raise budgetary outlays for O&M.

The main benefit to farmers from free irrigation is the savings from paying the ISF.

The repeal of the ISF provided some cost savings on the part of farmers; an overwhelming majority (87 percent) of NIS IA respondents found the free irrigation policy to be more beneficial than the cost recovery policy. Views on the specific benefits from free irrigation are summarized in Figure 5.

Figure 5: Benefits from free irrigation based on NIS IAs FGDs, percent of respondents



Source: Authors' data.

The cost savings obviously translate to higher incomes; there are also supposedly other effects, such as increased yield and cropping intensity, supposedly due to the extra income enjoyed from farmers from waiving the ISF.

The shift to free irrigation in NIS addressed some distortions, though with unclear implications for IMT.

Under free irrigation, the incentive to under-declare area irrigated is removed; rather, with costing of O&M subsidy dependent on area planted, there might be a tendency to overstate in the opposite direction. Moreover, resources expended in collecting the ISF can be saved and diverted elsewhere. The IAs mentioned however that miscellaneous contributions from members were still being collected, but under a different label (irrigation maintenance fee, association fee, water maintenance, etc.)

The idea of giving farmers or irrigators associations bigger roles and more responsibilities in the operation and management of national systems was meant to address the sustainability concerns given limited funds for O&M. However, NIA can no longer incentivize management transfer by sharing its ISF collection with the IA. Under its current IRRs, the free irrigation policy may have therefore diminished the incentive for IAs to participate and contribute more towards managing and sustaining the NIS.

Funding for O&M has apparently declined under free irrigation.

It is too early to assess whether or not the shift to free irrigation has led to a net improvement of O&M outcomes. According to NIA informants, O&M subsidy under cost recovery was about **Php 650 per ha per season**; this corresponds to 30 percent of the average value of the ISF per ha (about 2.5 cavans of palay at the government support price of Php 17 per kg). Compare this to the current subsidy provision consisting of an operating subsidy of Php 150 per ha per season, together with a maintenance subsidy per km lined canal. Using the figure of 34.5 m of canal per ha of irrigated service area (using 2018 data from NIA), of which 84 percent consists of earth canals, then the maintenance subsidy is another Php 95 per ha, for a total of **Php 245 per ha per season**, equivalent to a 62.3 percent decline in the O&M subsidy.

Likewise, in no case has an IA expressed satisfaction at the level of O&M provided whether before or after free irrigation. The impression of IA respondents is that its current subsidy levels are too low. IAs therefore have to keep collecting from their members to generate enough funds to properly cover O&M. The subsidy provided by NIA cannot fully cover the maintenance costs, especially those involving major repairs or rehabilitation. In some NIS, IAs reported that there is no improvement in system performance when free irrigation has been introduced.

A minority of IAs expressed overall dissatisfaction with the shift to free irrigation. These NIS were those located in Jalaur, Iloilo as well as along the Mambusao River in Roxas City. Their objections expressed by the concerned IAs are illustrative of the difficulties attending implementation of free irrigation.

- In the Jalaur system, the main canal from the source suffers water shortage due to siltation. The subsidy is insufficient, as laterals have become nonfunctional and main

canal has been almost fully silted. These NIS have reported that there was no improvement in system performance when free irrigation was introduced in 2017.

- In Roxas City, some IAs are complaining that laterals are only partially operational. Management and association fees provided by NIA, cannot fully cover the maintenance costs, especially those involving major repairs or rehabilitation.

4.2.2 Communal systems

Free irrigation is seen to be beneficial in communal systems due to subsidy for O&M, and added incentive to undertake new projects.

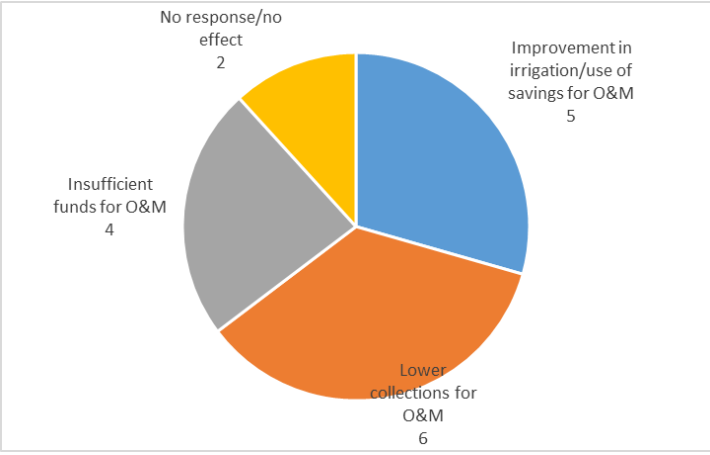
Under cost recovery policy, IAs in CIS were left to fend for themselves in terms of funding O&M. Under free irrigation they are entitled to a subsidy equivalent to what is received by IAs in the NIS. During the period of field work, CIS IAs had not yet received the O&M subsidy, but were expecting to receive it; with this expectation, and overwhelming majority (75 percent) assessed the free irrigation policy to be beneficial to them.

Removal of CIS amortization minimizes conflicts between NIA and the IAs, and increases funds for the association. Not only has free irrigation provided a recurrent subsidy for O&M; it has also provided a capital subsidy for new irrigation projects, as the NIA will no longer require IAs to pay for amortization. Hence, confirmation of new small irrigation projects and rehabilitation of existing systems are easier because farmers are no longer hesitant to implement such projects.

The level of O&M in communal irrigation systems is constrained by the low level of subsidy and increased difficulty in collecting O&M contributions from IA members.

Of the 24 responses obtained from CIS IAs, 17 stated that free irrigation will affect the level of O&M. Reasons given for the effect are broken down in Figure 6. Five of them (29 percent) said that the level of O&M will improve, mainly due to additional funding given government, that can be used for O&M; the savings in amortization can also be used for this activity.

Figure 6: Reasons given for change in O&M level, CIS IA respondents (N = 17)



Source: Authors' data.

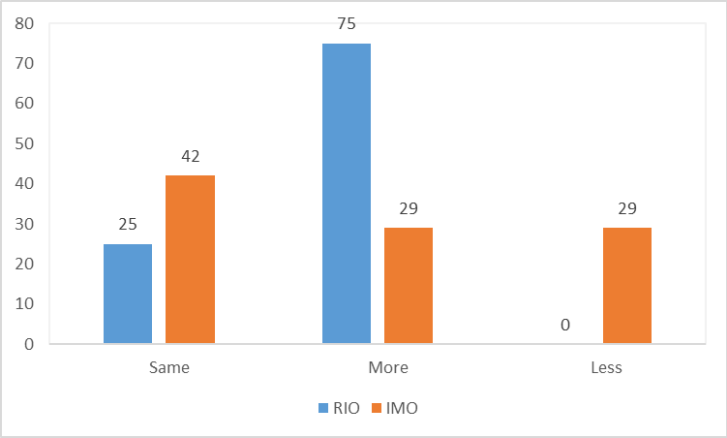
However, some IA respondents point to potential difficulties, the most serious of which is the inability to collect from their members. Even before CIS IAs had received a budget for O&M, some members had already stopped paying for ISFs. In general, free irrigation is expected to lead to lower collections (according to six respondents, or 35 percent), in the face of insufficient O&M subsidy from government (four respondents, or 24 percent).

4.2.3 Operational and institutional issues: perspectives from NIA

Overall, free irrigation is expected to increase the level of O&M in Philippine irrigation.

NIA staff in regional and field offices generally hold that level of O&M will increase or remain the same; in RIOs, the share of those expecting an increase in O&M is as high as 75 percent (Figure 7). Given the low level of O&M subsidy in NIS, this increase must therefore be due to: a) allocation for O&M of CIS (where there was none before); b) elevation of maintenance inputs from NIA itself over its management responsibilities; and c) continued internal fund generation of IAs for O&M. We note however the dissenting opinion of NIA Central Office staff, who remain skeptical about the benefits from free irrigation policy in terms of managing the IAs, inasmuch as the new policy has discouraged resource mobilization from IA members.

Figure 7: Share of NIA respondents by expectation of change in O&M with FISA (%)



Source: Authors' data.

The shift to free irrigation have altered the incentive structure of NIA, for both staff and NIA as an institution; while facilitating some administrative processes.

Under cost recovery, various incentive schemes were in place for NIA staff, which were tied to ISF collections. The Variable Incentive Grant (VIG) is given at year-end, to fund personnel incentives. The VIG is given to offices based on physical performance and financial self-sufficiency indicators. With free irrigation, the VIG will need to be replaced with a different incentive scheme.

As an institution, NIA should become aware of the tendency for IAs to be more complacent about project viability, as they perceive that they will be receiving some level of service

(however poorly) without paying any of the cost. Unless corrected, project selectiveness within NIA itself may be compromised under free irrigation.

Under cost recovery policy, interests of NIA and IAs would often be in conflict as NIA seeks to collect fees and the latter seeks to avoid paying – often disputing the value of the service actually being provided by NIA. Moreover, disbursement of salaries tends to be tied to flow of ISF collections, leading to occasional delays in release of staff salaries. Under FISA, the conflict of interest issue is mooted, facilitating coordination with IAs; furthermore, funding for O&M is remitted directly by DBM to NIA from the General Fund, with no delays in release.

Under free irrigation, NIA will need to reconfigure its functions and staff complement.

The NIA had previously expended considerable resources and manpower collecting ISF from NIS and amortization from CIS under the cost recovery policy. This function is now removed under free irrigation. Rather, NIA must now intensively monitor the IMT program in both NIS and CIS; as well as allocate more resources for O&M and technical assistance. In particular, IMOs will now need to be considerably strengthened. Under this new set-up, NIA Irrigation Development Officers (IDOs) believe that free irrigation can reinforce partnership between NIA and the IAs.

4.3 Analysis of findings

A simplistic view of FISA suggests that under the Act, government both supplies and pays for O&M in NIS (GG option) while contributing to the cost of O&M in CIS (UG option). However closer assessment based on the IRRs suggests a more nuanced framework. The IMT strategy provided in the IRR implies that NIA is also preferring the UG option even in NIS, though the scope of user responsibility is certainly less than that in CIS. The IMT scheme somehow convinces IAs in NIS to accept at least some management responsibility, in exchange for a subsidy. NIA is continuing to assign full management responsibility of CISs to the IAs; in return, they pay a subsidy on equal terms as in the NISs. This likewise suggests that IAs also have the incentive to continue in their management responsibility.

The incentive for IAs to absorb management responsibility does not always work. For instance, resource mobilization within the IA may fail if enough members opt out of making maintenance contributions; this has been observed or conjectured on the part of several IAs in the study sites. Failure of an IMT scheme in NIS implies defaulting to the GG option, as discussed earlier.

However, in the case of a CIS, the NIA does not actually have the authority to take over the management in case of poor maintenance by the IA. Suspension of an IMT contract implies that the O&M subsidy will also be suspended; however, the IA continues to be responsible for the CIS.

What might be the incentive for participatory management? And what might make such incentives fail? For the CIS, the first question is easy to answer – the O&M subsidy provides additional incentive to continue to manage the system effectively, as poor management will likely entail a loss of the subsidy.

For NIS, the question of incentives is much trickier. Suppose, for publicly-managed and publicly-funded systems, government only provides the minimum maintenance (see 3.1.2). There

is in fact strong evidence to suggests that government provides even a lower level of maintenance, i.e. low enough to fall into a deterioration-rehabilitation-deterioration cycle (Araral, 2005).

Suppose further that with pragmatic maintenance, the discounted value of the benefit stream of irrigation service outweighs the discounted value of the cost stream of O&M. Then the IA members have an incentive to raise the maintenance level from minimum to at least pragmatic, especially for assets for which user maintenance is affordable (i.e. secondary irrigation structures). This maintenance level is made even more affordable with additional public subsidy for O&M. Improved system operations, and the move up from minimum to pragmatic maintenance levels, offer a two-fold answer to the first question.

As to the second question, the answer for both systems is clearly the prospect of free-riding in the presence of non-excludability. As discussed earlier, it is difficult to deny water to irrigation system users. Some users therefore may opt to shirk and let others pay for asset maintenance, while benefiting from high quality of irrigation service. This is precisely the problem around which IAs are organized, a problem which not all are successful in solving. The presence of O&M subsidy from NIA may, perversely, embolden some IA members to shirk their responsibility to contribute to O&M.

This interpretation of the FISA IRRs is summarized as follows: NIA offers to provide minimum level of functionality of irrigation systems. It offers an IMT scheme to IAs, which assigns management responsibilities, as well as a subsidy for O&M for those who assume management responsibility. Abolition of the ISF implies that NIA is transitioning away from a fee-collecting agency towards one specialized in technical assistance, contract design, and performance monitoring. Similarly, IAs are in an adjustment phase, learning that voluntarily absorbing management responsibilities and costs is in their own best interest even under a policy of free irrigation service.

5. CONCLUSION

5.1 Summary

Before 2017, the country's irrigation systems have had a long history of cost recovery, interrupted only briefly in 1998. In the late 1990s it has also encouraged water user's participation in irrigation management, with complete turnover being a standard practice in communal systems, whereas partial turnover was implemented in national systems. In the latter, turnover was incentivized by sharing of ISF collections.

All this has changed with the Free Irrigation Service Act of 2018. The Act provides for free irrigation for farmers with landholdings of eight ha or lower; such landholdings account for over 98 percent of all farms/holdings. Free irrigation covers both O&M cost and capital cost. For NIS this entails repeal of the ISF; for CIS, the IRRs of the law provide for a subsidy for O&M.

Based on KIIs and FGDs, the study found that in NIS, cost recovery was associated with distorted incentives, failures in ISF collection, and inadequate level of O&M. Meanwhile the main benefit to farmers from free irrigation is the savings from paying the ISF in the case of NIS; and the subsidy for O&M in the case of CIS.

Despite a likely decline in O&M subsidy for IMT areas, overall O&M funding is expected to increase. Although free irrigation policy was implemented unilaterally, with very little consultation with IAs, many IA members have demonstrated willingness to continue to contribute towards the delivery of water services. Lastly, the shift to free irrigation have altered the incentive structure of NIA, for both staff and NIA as an institution. Under free irrigation, NIA will need to reconfigure its functions and staff complement.

These findings from field investigation narrowly examine irrigation sector outcomes. More broadly, equity and efficiency analysis relating expenditures to expected impacts raise serious concerns. The analysis showed that, despite a significant budgetary allocation for free irrigation, benefits received on a per ha or per farmer basis are relatively small. Moreover, while beneficiaries of free irrigation are poorer than average, a large majority of potentially beneficiaries are non-poor; to achieve equity objectives, targeted transfers are probably superior to in-kind transfers such as free irrigation.

5.2 Recommendations

1. ***Continue to pursue IMT within the context of free irrigation for both NIS and CIS, based on minimum maintenance for NIA, and transparent maintenance standards for both NIA and IA, to be stipulated in the IMT contract.***

The provision for IMT in the IRRs of FISA may be contested by advocates who back a policy of completely free irrigation with zero contribution from farmers. However, the IMT strategy is probably sound, and relieves some of the cost of O&M on the public treasury. To incentivize management transfer, users must realize they can do maintenance better and/or more efficiently than NIA. Hence, NIA should adopt a minimum maintenance strategy (see Section 3.1), with transparent maintenance standards for itself, under the default case of government-managed and government-funded O&M.

2. ***Provide for sustained and increasing O&M subsidy, but make it available only on a performance basis.***

Funding for free irrigation service is vulnerable to the vagaries of the budgeting and approval process. To maintain credibility of the policy, it is incumbent for the Executive to continue to include O&M subsidy in the annual budget, and for Congress to vet and approve the proposal, for as long as FISA is in place. Beyond financial sustainability, the government should heed the clamor from farmers and irrigation sector advocates to increase funding for O&M. However, rather than providing this on an all-or-nothing basis, as in the current IRR, incentives should be built in by tying a larger subsidy allocation to the IA, to better O&M outcomes achieved by the IA under IMT.

3. ***Explore water-saving as a performance criterion in O&M subsidy.***

The current set of performance indicators provided in the IRRs relate only to irrigation service, rather than longer term issues of sustainability and water resource management. Currently there is no management-oriented measurement of water delivery (as is done under volumetric pricing) to calibrate payments based on economizing on water. In the subsidy-based regime under FISA,

similar incentive effects can be obtained by penalties for higher water usage; the penalty can be collected by subtracting the penalty value from the O&M subsidy.

4. ***Transform NIA into a service providing agency specializing in technical assistance to IAs, contract design, and performance monitoring.***

NIA staff had pointed out that under free irrigation, NIA is no longer expected to generate income in order to develop and maintain irrigation systems. In this set-up, its current charter as a government-owned and controlled corporation (GOCC) makes little sense; rather may need to be re-chartered along the lines of a line agency providing a public service. In doing so, it can focus on its core mandates in relation to O&M, namely: technical assistance; contract design; and performance management. As pointed out by NIA staff (and accepted by many farmers), IAs are badly in need training in system management; technologies such as alternate wet and dry irrigation; as well as institutional capacities in terms of leadership, financial management, and value formation.

5. ***Introduce a mandatory review comparing FISA with other social assistance and social protection schemes.***

The aforementioned recommendations flow from the logic of accepting FISA as a state policy. Given the newness of the legislation, it is prudent to keep the law intact and ensure its proper implementation (along the lines recommended above). However, this approach should not obscure the wider implications of a policy of deploying public funds for what is essentially a private good (irrigation service). This warrants a thorough review of the policy (say after five years of implementation), and compare it to other social assistance (subsidized agricultural insurance, targeted cash transfers, etc.). The aim is to evaluate whether the FISA is an effective instrument for delivering benefits for the poorest and most marginalized, relative to these other social protection schemes.

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