Irrigation in Tamil Nadu

Pre– and Post–Covid-19 Eras

K. Sivasubramaniyan*

With regard to the development of Tamil Nadu agriculture, specifically concerning the improvement of irrigation sector in the wake of Covid-19 pandemic, the following inputs, some of which already exist in the current policy domain, can profitably be implemented in real terms.

**Trends in agriculture sector before Covid-19**

In Tamil Nadu, the share of contribution of agriculture to gross state domestic product has been steadily declining over time. It declined from 35% in 1970 to 17% in 2000, 14.5% in 2011, and further to 11.5% in 2016 (Department of Economic and Applied Research, 2011, 2012, 2013; Sivasubramaniyan, 2016: 4). Hence, the revival of agriculture requires a big push, at least for a minimum period of 5 years.

Prosperity in agriculture depends on the extent of irrigation sources available for enabling better cropping pattern. In Tamil Nadu, revival of canal and tank irrigation systems in order to increase the irrigated area to their potential limit of about two million hectares, from a little more than a million hectares at present, should be the mission.

What is the present status of different sources of irrigation in Tamil Nadu?

* Madras Institute of Development Studies, Chennai > siva@mids.ac.in
Canal irrigation

The registered command area of canals is about a million hectares. But irrigating this much area has never been achieved even in a normal rainfall or canal supply year (Table 1). The need to increase canal-irrigated area with ‘alternate irrigation system’ (dividing the entire command area into two halves [zones] and providing irrigation for each zone in alternate year) in river basins is a good option. For instance, although the Cauvery canal irrigation serves more than two thirds of the total canal irrigated area in eight districts of Tamil Nadu, this area has been decreasing gradually. To compensate and increase this assured Cauvery canal area, its command area needs to be doubled by dividing the Cauvery ayacut into two zones so that each zone can be irrigated in ‘alternate’ year. (The prime reason is that in four of these eight Cauvery districts, 53% of net sown area [NSA] remains unirrigated). This task can be done as already practised in the Parambikulam Aliyar Project command and the Lower Bhavani Project command.

Present water use efficiency and productivity in the prime Cauvery delta districts are well below the state /national average, which indicates that the water use efficiency in the basin is very low. Towards exploiting the existing potential, if alternate irrigation is carried out successfully, this can be replicated in other river basins like Tamirabarani. So, it can enhance canal-irrigated area substantially, thereby increasing agricultural production and employment opportunities.

Tank irrigation

The importance of tank irrigation is multifaceted. As per state government data, Tamil Nadu has 41,127 tanks serving small (<40 ha; 33,142) and large (>40 ha; 7,985) ayacuts. The registered ayacut of all tanks is little more than one million hectares (Department of Economics and Statistics, 2018: 581; Vaidyanathan & Sivasubramaniyan, 2001).

A majority of tanks have their own catchment, and a limited number of large tanks have their wider catchment supplies through canals linked to rivers and dams. Tank irrigation does not involve much interstate disputes. To develop tank irrigation, Tamil Nadu has to construct many check dams–based small anicuts across a river to link them to the tanks.

Up to the 1960s, tank irrigation was the prime source in Tamil Nadu. During 1960s, 9.1 lakh ha were irrigated via tanks. But now, tank irrigation has lost its glory. The area served by tanks steadily declined and reached the 2,58,207 ha in 2016–2017. This is roughly 25% of the area registered (more
than a million hectares) under tanks. The several factors responsible for such decline can be broadly classified into physical, institutional, and technical. All these prevailing factors merit attention for revival of tank irrigation system.

The existing status shows the potential for construction of small anicuts for prudently linking with the tanks towards effective use of water. This possibility helps in generating short- and medium-term employment apart from developing the long-neglected tank irrigation sources. Also, once revived, prolonged income generation to marginal and small farmers through agriculture is possible.

The National Bank for Agriculture and Rural Development (NABARD) has noted in its latest state focus paper for Tamil Nadu, ‘Water availability is a key as also a limiting factor influencing the production and productivity in agriculture sector. It is essential to provide timely irrigation for effective utilization of agricultural land, and hence irrigation availability for all cultivable land within the next 10 years has been identified as a key objective under Tamil Nadu Vision 2023 prepared by Government of Tamil Nadu.’ (NABARD, 2020: 10–11).

The impact of Covid-19 in the surface irrigation sector

There are three dimensions to the impact of Covid-19 in the minor irrigation sector.

The first relates to the period of the pandemic in Tamil Nadu. The period started from the last week of March 2020. Usually the summer (April–May) is important for agriculture, because during this period farmers undertake preparatory farm works, such as summer ploughing, maintenance, and improvement of minor irrigation structures through kudimaramathu for kuruvai crop; these works are essential for sowing and till the southwest monsoon arrives in June. (Kudimaramathu is required in pre- and post- southwest monsoon periods, for canal maintenance and tank infrastructure–related maintenance, respectively, since tanks in Tamil Nadu get copious inflows mainly from northeast monsoon.) If these basic farm works are not undertaken on time, the severity of problems, in terms of late sowing, more wastage of water, and flooding due to weak tank or river bund and other infrastructure, will adversely affect crop cultivation. In 2020, due to Covid-19, planned cultivation could not be carried out prudently with effective use of all farm inputs to enhance productivity.

The second dimension relates to availability of farm labourers during the Covid-19 period. Agricultural labourers attending to routine farm works and works
related to minor irrigation, such as kudimaramathu, abstained from work and stayed safe at home due to implementation of lockdown measures. This adversely affected the routine maintenance of minor irrigation and related agricultural works. Further, the phenomenon of inter-district and intra-district displacement of agricultural labourers due to lockdown norms aggravated labour scarcity in agriculture, despite some relaxation to farm sector for carrying out essential operations. The post-Covid-19 period should also be fruitfully utilised for maintenance of both canal and tank infrastructure to reap good outcome from irrigation facilities and to ensure more income to farmers.

The third dimension relates to the healthcare of people in the farm sector in rural areas. Lack of awareness on, and seriousness in adherence to, mandatory preventive norms—namely, physical distancing, face masks, and washing of hands—result in large-scale violation of such norms at individual level. The intensity of spread of Covid-19 in rural areas was also impacted by ‘Koyambedu factor’ at community level. Such developments aggressive affect the ecosystem by paralysing the supply and demand value chains in agricultural sector, more particularly in horticultural sector. Severe storm and heavy rains in summer also led to loss of crops and farm income.

**Short-term policy measures**

1. The defunct Tamil Nadu Farmers’ Management of Irrigation Systems Act, 2000 (TNFMIS Act) can be revived to empower user farmers as the managers of tanks under the supervision and management of public works department (PWD) authorities. More importantly, this Act was created not only to revive tanks but also to strengthen the management of canal irrigation. The Act safeguards water users’ association (WUAs). If this Act were to be implemented, not only in the Covid-19 period, the farmers would be vigilant in protecting and maintaining the tank/canal system to get adequate water supply for better cropping. Once done, productivity will improve and farmers’ income will rise. This has not been happening in the past few decades.

2. Tank fisheries income, wherever possible, can be shared on a 50:50 basis as stipulated in the TNFMIS Act, between the WUAs and the Government of Tamil Nadu.

3. The farmers should be permitted to remove the silt deposited in the tanks, as and when it is necessary, free of cost. Although the government has permitted to remove silt, it is now politically oriented, and disputes are reported frequently. This can be solved through the implementation of the TNFMIS Act.
4. WUAs should be created for all tanks and canals, and they should be made functional. These associations should be empowered to take care of kudimaramathu in tanks, channel maintenance, and management of field-level water distribution, efficiently by farmers themselves. To do this too, recognition of the TNFMIS Act is the base.

5. As per the TNFMIS Act, PWD officials have duties, especially on removal of encroachments in the canals, channels, and water bodies, and related issues are to be sorted out as quick as possible. This has not been done so far, and the situation needs to be rectified.

6. Since irrigation water has been released from Mettur dam on 12 June 2020, it is time for proper maintenance of canals and channels throughout the Cauvery command area. For this purpose, the government should release an order indicating that proper canal maintenance should be undertaken by farmers themselves in their village jurisdiction through WUAs, and wherever this is not feasible the government should take steps to do the maintenance on time to see efficient water use in the channels. Although the state government has appointed a few special officers (IAS cadre) for the said purposes, the main expectation this year is whether the tail end of the Cauvery command areas get adequate supply. Only if they get required water supply, we can say that the maintenance system is functioning well. This has not been possible for many decades.

7. The supply chain during post-production period needs to be strengthened in every district, with the intensive promotion of collective marketing structure, like farmer producer organisations and farmer promotion committees. Village- and block-level marketing facilities are inadequate and lead to heavy loss of marketing of farm produce. Block-level uzhavar sandhai (farmers’ markets) should be equipped with facilities, such as water, sanitiser, face masks, and physical-distance marking, to prevent spread of corona virus.

8. NABARD may consider focusing on funding of minor irrigation works under Rural Infrastructure Development Fund (RIDF) to supplement the state budget. More attention could be paid to construction of check dams and river-based anicuts, and direct supervision of the status of maintenance of existing minor irrigation works already financed. Remedial action needs priority attention. Inlet channels of all minor irrigation tanks need to be revived fully.

9. An intensive awareness campaign on the significance of disease prevention norms needs to be arranged through various kinds of cultural programmes that are designed based on indigenous knowledge (like street theatre and drama, folk songs, village Koothu, puppetry [Bommalattam]) and hoardings in places like shanties and temple premises. This activity needs to be implemented and monitored by different departments (health, PWD,
agriculture, fisheries, forestry) and involve the people under a participatory approach. Apart from Covid-19 prevention message, the importance of TNFMIS Act and its usefulness also can be propagated. For these purposes, social capital, such as self-help groups, WUAs, farmers’ clubs, and joint liability groups, need to be utilised along with village organisations.

**Medium-term policy measures (3–5 years)**

1. Corona special five-year perspective plan (2020–2021 to 2024–2025) for provision of infrastructure is required for minor irrigation works under RIDF by NABARD. The present RIDF plan by NABARD needs to be revisited to identify the priority requirements of rural infrastructural works related to farm sector in all the districts of Tamil Nadu, to overcome the hurdles in the supply chain caused by the pandemic. For example, for ensuring adequate storage and cooling facility for crop output, including horticulture products, in majority of revenue villages, private investment-based storage structures like godowns need to be encouraged with proper subsidy component. NABARD may study the potential demand-based special plan for storage/cooling centre at block level in every district and include in their Potential Linked Credit Plan as this would supplement the state budget under RIDF allocation. Also, the package announced by the finance minister is not enough, and the problem in irrigation sector is entirely different. Here the suggestion is to develop and upgrade the infrastructure facilities of surface irrigation—canal and tank—systems that are grossly neglected. Further, farm output-based storage facilities (e.g., godowns) at village and block levels need to be developed.

2. The four lead banks (State Bank of India, Indian Overseas Bank, Indian Bank, and Canara Bank) may prepare special three-year (2020–2021 to 2022–2023) perspective corona special credit plan in consultation with NABARD and respective district consultative committees to identify the activities in the farm sector to meet with the credit gap caused by the pandemic. The State Level Bankers’ Committee (SLBC) can take initiative on planning this. Under the lead bank scheme (LBS) of the Reserve Bank of India, this potential credit plan includes cooperative banking and micro financing (through non-banking financial companies, microfinance institutions, and nongovernmental organisations). Insurance players also come in the purview of LBS. So, a comprehensive corona special three-year plan for covering both potential credit plan linked with insurance on farm sector (including animal husbandry and fisheries) under LBS may be considered. SLBC, NABARD, and RBI need to prepare the guidelines for this corona special comprehensive plan for Tamil Nadu as suggested.
3. Based on soil quality map, crop, and water productivity, suitable measures need to be taken by farmers to increase the maximum yield of a particular crop. For this, adequate and timely extension services and outreach to farmers may be arranged by agricultural universities as well as agriculture-related departments.

4. Wherever water deficiency is noticed, water intensive crop cultivation must be stopped and only dry irrigated seasonal crops should be grown. In those areas, modern technology-based drip, sprinkler, or water gun, and advanced precision farming methods are to be adopted. For this, groundwater recharge programmes and river extension programmes should be undertaken intensively. River water should be made available to all basin areas (including new extension areas) at least for one season in a year. Scepticism regarding availability of water leads to non-adoption of technology in most areas. As long as wells are available, usage of this modern technology is not a problem. The problem is availability of water.

5. In agriculture, the cost of cultivation has been steadily increasing due to increase of input costs. Labour cost is the highest component that farmers are unable to bear. Also, in many places, labourers are not readily available for agriculture works. To avoid such a situation and instead help farmers, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) labourers can be utilised by the farmers when they have their farm work. Farmers can meet 50% of the labour cost, and the remaining 50% can be borne by the government through the allotted MGNREGA funds.

6. In many government-aided programmes, the beneficiaries’ involvement has been grossly neglected. Consequently, without their participation, the accountability and success of the programme becomes questionable. A good example is the recently completed first phase of the Irrigated Agriculture Modernisation and Water- Bodies Restoration and Management (IAMWARM) project aided by the World Bank. The basic objective of the programme—more income per drop of water—and the involvement of eight line departments (agriculture, agricultural engineering, animal husbandry, agricultural marketing, horticulture, fisheries, TNAU and public works department) to achieve the objective, have been wonderful as per the guidelines given by the funding agency. However, the desired outcomes of the project, in terms of assured water supply to crops and envisaged cropped area, have not been achieved, mainly due to total exclusion of beneficiary farmers in the development activities. As seen in Table 1, despite the project (2007–2014), the area irrigated by tanks steadily decreased in the 2010s too (only 4.2 lakh ha against the registered ayacut of a little more than a million hectares in Tamil Nadu). The government should take appropriate steps to fulfil these targets, at least in the ongoing second phase of the project, to raise the tank ayacut area for cultivation adequately in Tamil Nadu.
Since farmers’ income through agriculture is not always appreciable, and irrigation sector is performing poorly, the pandemic and post-pandemic periods should be utilised to develop this vulnerable sector.

**Linkages with interrelated sectors/issues**

**Other steps for the betterment of agriculture in Tamil Nadu**

1. Since the MGNREGA programme is active, this labour force should be used prudently to help agriculture, especially the farmers to help their agricultural activities, through expansion of irrigation sector. For this, half of the wages should be shared by the government through MGNREGA funds and the other half by the beneficiary farmers.

2. To solve farmers’ credit problems, strict instructions should be given to all banks to give liberal credit, based on the farmer’s landholdings. The interest levied could be 4% per annum. This demand for credit for farm sector needs to be included in the corona special three-year credit plan by lead banks, as discussed under medium-term policy.

3. To solve water scarcity problems, especially in agriculture, the central and state governments should give priority in the planning process to link the southern peninsular rivers. Then these should be interconnected to bigger tanks. Available rainwater and river water have not been stored or utilised properly due to lack of or poor maintenance of tanks, inlet channels, and other storage reservoirs. So, during good rains, this could be stored properly to irrigate additional areas which are always affected by water scarcity. Consequently, farmers may cultivate at least in a monsoon season to raise their income level. This is where WUAs are to be created and strengthened (TN–IAMWARM, 2014). Further, 42.3% of net sown area in Tamil Nadu is still rainfed (average of 2010–2011 to 2016–2017).

4. A village development plan is prepared by the village panchayat in every village in Tamil Nadu, and committees are constituted—such as village works committee, planning committee, and group for supervising MGNREGA scheme—with people in the village as members, for planning and implementing village-level development programmes. In the context of the imperative need for adoption of preventive norms (namely, physical distancing, facemask, and handwashing, to safeguard the human being in the last mile), a ‘Corona Healthcare Committee’ may be constituted and entrusted with raising awareness at individual and community levels in the village, and for supervision, under participatory approach, of healthcare scheme at village level.
### Table 1

Net Irrigated Area by Sources in India and Tamil Nadu from 1950–1951 to 2014–2015 (in lakh hectares)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area</td>
<td>% to NIA</td>
<td>Area</td>
<td>% to NIA</td>
<td>Area</td>
<td>% to NIA</td>
<td>Area</td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canals</td>
<td>91.9</td>
<td>41.2</td>
<td>111.9</td>
<td>41.9</td>
<td>137.7</td>
<td>40.1</td>
<td>163.1</td>
</tr>
<tr>
<td>Tanks</td>
<td>41.5</td>
<td>18.6</td>
<td>44.5</td>
<td>16.6</td>
<td>38.1</td>
<td>11.1</td>
<td>29.9</td>
</tr>
<tr>
<td>Wells + tube wells</td>
<td>66.3</td>
<td>29.8</td>
<td>87.1</td>
<td>32.6</td>
<td>144.1</td>
<td>41.9</td>
<td>207.8</td>
</tr>
<tr>
<td>Other sources*</td>
<td>23.2</td>
<td>10.4</td>
<td>23.9</td>
<td>8.9</td>
<td>23.8</td>
<td>6.9</td>
<td>25.4</td>
</tr>
<tr>
<td>Total NIA</td>
<td>222.9</td>
<td>100.0</td>
<td>267.3</td>
<td>100.0</td>
<td>343.6</td>
<td>100.0</td>
<td>426.3</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canals</td>
<td>8.0</td>
<td>(8.7)</td>
<td>37.6</td>
<td>(7.9)</td>
<td>35.6</td>
<td>(6.5)</td>
<td>33.2</td>
</tr>
<tr>
<td>Tanks</td>
<td>7.8</td>
<td>(18.7)</td>
<td>36.8</td>
<td>(20.5)</td>
<td>36.8</td>
<td>(22.3)</td>
<td>31.5</td>
</tr>
<tr>
<td>Wells + tube wells</td>
<td>5.0</td>
<td>(7.5)</td>
<td>23.5</td>
<td>(7.4)</td>
<td>26.0</td>
<td>(6.4)</td>
<td>34.1</td>
</tr>
<tr>
<td>Other sources*</td>
<td>0.5</td>
<td>(2.0)</td>
<td>2.2</td>
<td>(1.6)</td>
<td>1.6</td>
<td>(1.5)</td>
<td>1.3</td>
</tr>
<tr>
<td>Total NIA</td>
<td>21.2</td>
<td>(9.5)</td>
<td>100.0</td>
<td>(9.3)</td>
<td>100.0</td>
<td>(7.8)</td>
<td>100.0</td>
</tr>
<tr>
<td>Total NSA</td>
<td>55.45</td>
<td>60.26</td>
<td>61.35</td>
<td>56.22</td>
<td>56.33</td>
<td>50.22</td>
<td>48.04</td>
</tr>
</tbody>
</table>

Notes: Figures in parentheses indicate source-wise percentage compared to India. NIA = Net Irrigated Area. NSA = Net Sown Area. * indicates anicuts, bhadaras, springs, kuttai, thangal, small diversion networks, and so on.

We are in the midst of a pandemic shock as well as a deep economic recession. It necessitates extraordinary policy action. However, we do not have the luxury of time to carry out a new research plan. The situation calls for immediate reflection and action, based on available data. In the Covid-19 Series of Occasional Policy Papers, MIDS faculty contemplate on diverse issues of importance, contextualise their work to the contemporary challenge, draw attention to linkages with interrelated sectors and issues, and suggest short-to-medium–term policy measures. This series would be a useful input in the design of the state’s post-pandemic socio-economic policy.

P.G. Babu
Director, MIDS