Power Subsidies and Groundwater Use

What is the issue?

- The attempt to use power subsidy to control groundwater extraction, as in Punjab, ignores certain ground truths.
- Here is an overview of the concerns with groundwater use and the shortfalls with the Punjab model.

How is electricity a factor?

- Groundwater overdraft is also linked to subsidised power supply to agriculture.
- So, the mode of electricity pricing supplied to agriculture could be changed to control groundwater abstraction.
- This can in turn help achieve the goals of efficiency, equity and sustainability.
- The most frequently suggested instrument for controlling groundwater abstraction was the metering and pro-rata (proportional) pricing of electricity.

What is the Punjab model?

- An idea which came from a prominent research group recently is direct delivery of power subsidy to agriculture.
- It involves metering of agricultural power connections, but no metered tariff.
- The idea is to make sure that farmers get free power.
- But, the power utility reduces its subsidy burden gradually by incentivising the farmers to use less electricity.
- It thereby saves both groundwater and electricity.
- This model was adapted by the power utility of Punjab.
- It involves offering cash incentives to well-irrigating farmers who use less than a designated quota of electricity each season.
- The individual's quota is decided on the basis of the connected load and the season.
- E.g. for one HP of connected load, a farmer is entitled to 200 units a month during the kharif season and 50 units per month during the winter
- The farmer gets a cash incentive of Rs. 4 for every unit of electricity saved.

What is the downside of this?

- This pilot project implemented in 135 farms across Punjab has shown reduced electricity consumption by around 60% of the farmers.
- However, nearly a third of the farmers had increased electricity consumption even after accepting the scheme.

- **Reason** - In a given year, season and locality, the power demand will be a function of the cropped area and cropping pattern.
- Fixing the quota is on the basis of connected load.
- This can be said to be rational only if the farmers have correctly chosen the pump capacity.
- They should have taken into consideration the actual quantum of energy required for irrigating farm and the number of hours that the power supply is available.
- But this may not be the case in reality.
- Possibly, many resource-rich farmers have chosen over-sized pumps.
- In such cases, their energy quota will be much higher than what is required to irrigate the plot even at the current excessive levels of dosage.
- The reason for maintaining the high-level of irrigation dosage is that it could be rewarding from an economic perspective, yield improvement.
- The value of this is logically more than the economic incentive they get by saving water.
- In effect, resource-rich farmers might keep their power consumption much below the ‘quota’ and claim cash incentive, but continue with inefficient irrigation.
- On the other hand, a resource-poor farmer, who has a low-capacity pump might end up using the full quota of energy or even more.

What is the way forward?

- Ideally, the ‘energy quota’ should have been fixed on the basis of the actual land holding cultivated by the farmer during a particular season.
- It is this that determines the water and energy requirements for irrigation.
- The point is that the current subsidy structure may not create any special incentive to save either electricity or groundwater in Punjab.

- The irrigated paddy fields as well as rainfall contribute to the recharging of shallow groundwater during the monsoon season in alluvial Punjab.
- So, besides regulating irrigation, addressing rainfall infiltration is also important.
- Also, choosing a crop or variety with lower evapo-transpirative requirement is essential to conserve soil moisture.

- All these require coordination among various departments - water resources, electricity and agriculture.

Source: Business Line