

**WATER, ENERGY, FOOD NEXUS AND ENERGY SUBSIDIES IN**  
**IRRIGATION IN INDIA:**  
**EXTERNALITIES AND ITS IMPACTS ON FOOD SECURITY,**  
**WATER SECURITY AND**  
**PUBLIC HEALTH**

**Gayathri D Naik**

**(Doctoral Researcher, SOAS University of London)**

**Sanjay Sheno P**

**(Assistant Professor, Christ University, Bengaluru)**

# INTRODUCTION

- India – Most groundwater dependent and most exploiting country in the world.
- Role of subsidies in groundwater exploration crucial.
- Green Revolution – 1970s - agricultural boom = groundwater revolution.
- Government supported agriculture – subsidies ; Heavy subsidies= credit, irrigation, power, seeds, market;
- Aim= to attain food security by enabling water security
- subsidies create energy – water- food nexus; But impacts on public health .
- This paper= explores this nexus created by energy subsidies and its impacts on food and water security and public health

# NEED FOR SUBSIDIES

- Aim= to help small scale farmers access natural resources like water and government aid.
- distributive justice – part of constitution
- Constitution calls upon for promotion of agriculture- [Art 48. The State shall endeavour to organise agriculture and animal husbandry on modern and scientific lines and shall, in particular, take steps for preserving and improving the breeds, and prohibiting the slaughter, of cows and calves and other milch and draught cattle].
- Post Independence= food scarcity in the country, inequity in access to natural resources , poverty, unemployment
- Food imports

# GREEN REVOLUTION AND PUSH FOR AGRICULTURE

- Green revolution introduced in 1970s
- Targeted food security of the nation- for the same – government helped farming communities through subsidies.
- Subsidies – credit, irrigation, energy, market support[ inputs and outputs]
- Even today these subsidies continue and form the crux of agriculture sector and burden for the state

# IRRIGATION SUBSIDIES

- Irrigation subsidies –
  - for surface water supplied by the state through canals
  - For Groundwater access – usually individual initiative
- This paper focus on energy subsidies granted for groundwater access.
- These subsidies also help in pumping canal water but
- Contribution of groundwater to irrigation being huge and India being largest exploiter – demands attention

# ENERGY SUBSIDIES

- Since 1950 and 1960s but strengthened after Green Revolution ; Earlier subsidies were for diesel pumps
- After rural electrification process started and green revolution initiated , electricity subsidies began .
- Electricity is a state subject under the constitution -= so each state policy differs
- Subsidies for energy used in irrigation – free electricity or cheaper rates.
- Now solar subsidies granted under central government KUSUM Project -
  - 30% MNRE (Ministry of New and Renewable Energy) subsidy,
  - 30% state government subsidy, 30% loan, and 10% farmers' upfront contribution

# ENERGY – WATER – FOOD NEXUS

- These subsidies helped farmers particularly small scale to access electricity
- Free electricity and cheap motor pumps – more deeper groundwater – irrigation sustainability – water security
- In turn helped in food generation – food security of farmers and country
- Subsidies- absent? - inequity result – small and marginal farmers
- Poverty and unemployment – increase
- Subsidies help in mitigating all these concerns



- Energy subsidies helped farmers in states like Punjab , Gujrat, UP and Rajasthan to explore groundwater.= green revolution belt
- Rajasthan scenario- field work done
- Dry state with groundwater dependency more- less rainfall
- Farmers marginal and small – subsidies – a relief
- subsidies – also for fertilisers and pesticides – augmenting the benefits of groundwater based irrigation – food crops – bumper crops
- Kerala- surface water and groundwater rich – subsidies also misused.



# SUBSIDIES AND PUBLIC HEALTH

- Energy- water- food nexus created by energy subsidies – explored by many scholars but its impacts on public health also demands attention .
- Why?
- excessive use of energy subsidies ( free electricity) – deeper aquifers – groundwater exploitation – falling water tables – groundwater critically exploited in many of these states
- Rajasthan also groundwater exploited
- Kerala – less exploration – quality issues
- More reliance – more problems
- Race to dig deeper – food demands rising – water too

- Energy subsidies + fertiliser subsidies = groundwater depletion[ quantity + quality ]
- Free electricity – more deeper aquifers- polluted by influx of chemicals fertilisers and pesticides.
- More and more places – water polluted
- Public health impacts- eg – fluorosis in areas like Alappuzha in Kerala
- eg- plachimada case – coco-cola company – groundwater extraction – company closed now- but- impacts of polluted water on health and ecosystem – not yet explored
- Kerala – Alappuzha – people affected by chemicals – cancer cases increasing

# WAYS FORWARD

- water policy and laws – fragmented approach – public health concerns created by excessive reliance on groundwater triggered by energy subsidies – not addressed
- Health laws- do not reflect the water quality issues.
- Science and policy = not interlinked in policy framework – particularly groundwater
- Groundwater law- not adequate to address the closer interlink between energy- water- food nexus.
- Demands an interface between science and policy – addressing impacts of energy subsidies induced water quality issues.