

## **Minutes of the Third Meeting of the Task Force for Interlinking of Rivers held on 28<sup>th</sup> April, 2016 at New Delhi.**

Third meeting of the Task Force for Interlinking of Rivers (TF-ILR) was held under the Chairmanship of Shri B.N. Navalawala, Chief Advisor, Ministry of WR,RD&GR on 28<sup>th</sup> April, 2016 at New Delhi. The list of the participants of the meeting is at Annex-1.

At the outset, the Chairman welcomed all the members of the TF-ILR, and other participants in the meeting. In his opening remarks, the Chairman stated that the second meeting of the Task Force was held on 5<sup>th</sup> November, 2015 and this meeting was being held after about six months. However, he was in constant touch with Member-Secretary, TF-ILR and Director General, NWDA. The Chairman, TF-ILR then requested Director General, NWDA and Member-Secretary of the TF-ILR to take up the agenda items for discussion.

### **Item No. 3.1: Confirmation of the Minutes of the 2<sup>nd</sup> meeting of the Task Force for Interlinking of Rivers held on 5<sup>th</sup> November, 2015 at New Delhi**

Director General, NWDA informed that the minutes of the second meeting of the TF-ILR were circulated vide letter dated 15<sup>th</sup> December, 2015 and no comments were received from any of the members of the TF-ILR.

Dr. Prodipto Ghosh stated that in last but one para under Item No. 2.5 of the Minutes of the meeting relating to him (on page 10), the words “financial analysis and cost-benefit analysis” may be modified as “economic cost-benefit analysis”.

The minutes of the meeting, with above modification, were confirmed by the TF-ILR.

### **Item No. 3.2: Follow-up action on the decisions taken during the last meeting**

The Director General, NWDA informed that:

- (i) The case for nomination of three experts in the fields of ‘Environment’, ‘River Geomorphology’ and ‘Socio Economics’ for co-opting as additional members in the Task Force had been submitted to Ministry of WR,RD&GR through Chairman, TF-ILR on 31.3.2016 for approval. The approval of Ministry of WR,RD&GR is awaited.
- (ii) Proposal for the renovation work of office space allotted by NDMC at Palika Bhawan, New Delhi to set up a separate Secretariat Office of Special Committee for Interlinking of Rivers, its Sub-

Committees and Task Force for Interlinking of Rivers with estimated cost of about Rs.1.44 crore had been approved by the Governing Body of NWDA in its meeting held on 27.1.2016. The works were to be carried out through Central Government/ State Government agencies duly following codal procedure and following Project Management Consultancy approach. The agency for carrying out the work had been fixed and the work had been awarded to M/s UP Rajkiya Nirman Nigam Ltd., New Delhi on 14.3.2016. The work had been initiated by the agency.

- (iii) As regards the difference in eligibility of the non-official members, the proposal for the entitlement of TA/DA of the non-official private members equal to the entitlement of non-official retired (Government officer) members (PB-4 in grade pay of Rs.10,000) had been submitted to Ministry of WR,RD&GR for approval on 4.3.2016.
- (iv) Ministry of WR,RD&GR had accorded approval for engaging 12 consultants (6 at senior level, 4 at middle level and 2 at junior level) for the work of Special Committee for ILR and its Sub-Committees and Task Force. The NWDA had appointed six consultants (5 at senior level and 1 junior level). Engagement of remaining six consultants (1 at senior level, 4 at middle level and 1 at junior level) was processed and 5 consultants (1 at senior level, 3 at middle level and 1 at junior level) were selected. Out of them, 2 consultants (1 at middle level and 1 at junior level) had joined. Remaining consultants were yet to join.

The Task Force noted the information.

### **Item No. 3.3: Review of NWDA Guidelines for carrying out Water Balance Study in a River Basin**

Chairman, TF-ILR stated that the Special Committee for Interlinking of Rivers (SCILR) had entrusted the issue of 'surplus water' for the purpose of Interlinking of Rivers to be deliberated upon by the Task Force and give its recommendations to the SCILR. He further informed that Hon'ble Minister, Telangana and Shri R. Vidyasagar Rao, Advisor, Government of Telangana had mentioned to him that the Guidelines of Technical Advisory Committee (TAC) of NWDA were quite old and needed to be reviewed in light of the latest developments. Further, another issue regarding limitation of the lift upto 120 metres in interlinking of rivers was also raised by some of the States. He mentioned that the lift of 120 metres was not sacrosanct but the lift should be economically viable.

Director General, NWDA mentioned that the TAC of NWDA was headed by Chairman, CWC with members from Ministry of WR, RD&GR and other Central Ministries/Departments, and member States of NWDA were Special Invitees. These guidelines were the compendium of the decisions taken from time to time as well as mostly in context with a specific condition or requirement in various meetings of the TAC in consultation with the member States of NWDA and the last guideline was added to it in its 25<sup>th</sup> meeting held in 1996. Thereafter, he made a brief presentation of these guidelines. The provisions regarding water availability, water requirements for domestic & industrial and agricultural uses, salinity control, environmental & ecological need, intensity of annual irrigation, area to be brought under irrigation by 2050 AD, regeneration and optimum lifting of water for inter-basin water transfer links were covered in the presentation.

Thereafter, Dr. Prodipto Ghosh made a presentation on “Interlinking of India’s Rivers: Maximizing the Benefits”, in which he highlighted the requirements of additional due diligence required at the macro and project levels. He covered ‘Promise’, issues in fulfilling the promise, various kinds of impacts, due diligence required in macro level & project level impact assessments, etc. relating to interlinking of rivers. A copy of his presentation is at Annex-3.3.1. He mentioned that interlinking of rivers (ILR) was a permanent solution to recurring problems of hydrological imbalance – droughts and floods; enable realization of India’s global competitiveness and major share in agriculture. He further stated that ILR was mother of all climate change adaptation strategies. However, apprehensions existed with respect to potential adverse environmental impacts; adverse social impact; fiscal impact and needed to develop a financing model that would help in ensuring correction of distorted irrigation tariffs. Further, macroeconomic impacts, optimal cropping patterns by State/region; regional environmental impacts across the entire country and mitigation options, comprehensive assessment of hydrological impacts and potential of the programme to address adaptation in respect of hydrology would be required to be assessed. He described in detail due diligence required in macro level and project level integrated impact assessments. He also stated that the capacity to conduct such an analysis existed in the country and no external technical assistance was required. In addition to helping national and State level decision-making, the study would also comprehensively respond to the doubts expressed by interested quarters, domestic and foreign, regarding the viability of the ILR on environmental, economic and social impact grounds.

Chairman, TF-ILR stated that selection of the cropping pattern in various command areas had got serious legal and political impact. In the Southern India, during British period, localization of cropping pattern was in vogue i.e. the farmers were to grow a particular crop in a particular command. However,

now-a-days, actual cropping pattern on the ground was found to be totally different than that designed at the time of project planning. He cited an example of Ukai Irrigation Project in Gujarat, wherein sugarcane was only 15% under designed cropping pattern, whereas now it was about 50%.

Dr. Prodipto Ghosh mentioned that the cropping pattern was also being distorted due to free/highly subsidized water (as in case of Andhra Pradesh) and free/highly subsidized electricity (as in Punjab), wherein high water consuming crops were grown. It was essential that farmers responded positively to each component project of the ILR by adopting economically optimal and environmentally sustainable cropping patterns. In order to enable them to do so, various policy measures would have to be undertaken alongwith engineering construction and operation. These may include water and irrigation tariffs (which would also ensure financial viability of each project), electricity tariffs to farmers (both of which would also have positive fiscal impacts at the State levels), as well as Minimum Support Price (MSP) and procurement policies. Other policy measures, such as formation of water users' associations to manage equitable water distribution and adoption of water quotas for farmers also needed to be explored and where feasible, adopted. He felt that the potential of the ILR to enhance groundwater recharge during the peak season should be explored, since given the shortage of land for surface storage reservoirs, the extremely large capacity of underground aquifers should be tapped. He further stated that no guideline should be prescribed for dependability criteria. He suggested that benchmarks should be fixed for ecological and environmental flows.

Shri R. Vidyasagar Rao drew attention of TF-ILR to the Sub Para-5 under Para II - Computation of Yield of the Guidelines, wherein it was mentioned: "..... the allocations indicated by the awards/agreements will be retained in the studies without any change." He therefore, emphasized that the Tribunals' Awards should be respected and implemented without any change. Chairman, TF-ILR replied that Tribunals' Awards were always respected. Shri R. Vidyasagar Rao stated that there were two basins viz. Godavari and Krishna in Telangana. The Godavari Water Disputes Tribunal, in its award, had allocated the waters of the Godavari basin at different locations to the co-basin States, without actually working out the water availability at certain dependability. The Krishna Water Disputes Tribunal-I, in its award, had allocated the waters of the basin at 75% dependable flows. While the Krishna Water Disputes Tribunal-II, in its award, had allocated the waters of the basin at 65% dependable flows. The Guidelines of TAC of NWDA were old, hence, required review and revision. He suggested that the water balance should be worked out by assessing the water availability based on 75% dependability and

average flows. The remaining water should be considered as surplus water and planned for diversion to the water deficit areas.

Shri A.D. Mohile stated that Dr. Ghosh's presentation was very good and covered all aspects of water resources development and management. However, the model was required to be planned, which was acceptable in today's political scenario. As regards the Guidelines, he mentioned that both groundwater and surface water should be considered in planning of ILR projects. He further mentioned that the regeneration was actually 40% and not 10% as provided in the Guidelines. As regards provision of evaporation losses as 20%, he mentioned that there was no estimation by any research or otherwise by which the evaporation losses could be estimated. Now, in almost every region, the data on reservoir evaporation losses was available, which could be used to arrive at the reservoir evaporation losses while planning the project. He was in agreement for considering 10% of the 75% dependable yield for salinity control as provided in the Guidelines. He further mentioned that the environmental need could be considered as 10% of the average lean season natural flow downstream of the storage. He suggested that the SCILR and/or TF-ILR could take up the issue of surplus water and review the Guidelines. He further suggested that the permissible lift in ILR projects should be techno-economically viable. He also clarified that the permissible lift should be economically viable while calculating economic cost of the lift, wherein the cost of electricity should be considered as opportunity cost and not subsidized cost.

Chairman, TF-ILR mentioned that the environmental flow was sensitive issue and had been under discussion/debate since last 15 years. It was actually the requirement of local river flow/eco system.

Shri M. Gopalakrishnan appreciated the presentation of Dr. Prodipto Ghosh. He stated that the 75% success rate had been considered in the dependable criteria in irrigation projects. As regards lift upto 120 metres in ILR projects, he mentioned that the lift should be economically sustainable and may differ from project to project. He expressed that when ILR projects were implemented, it would transform in a better water discipline in the sector. He also suggested for adopting system studies approach. In case of sectoral uses, water for people should be considered in domestic and industrial uses.

Shri R. Jeyaseelan stated that there were contradictory provisions regarding groundwater in the Guidelines, viz. in Sub Para-1 under Para IV - Groundwater, it provides as: "The groundwater potential may be left to the states and may not be considered as an available resource for the water balance studies being done by NWDA" whereas, in Sub Para-10 of the same para it provides as: "It was agreed to indicate groundwater as a separate resource." He

suggested that the guidelines should be reviewed on the basis of totality or in holistic manner and come out accordingly with clear guidelines.

The representative of Rajasthan stated that in deciding the dependability criteria for water balance, 'Need' and 'Availability of water' were the main issues. National Water Policy (2012) had not prescribed priority for various uses. The Rajasthan State Water Policy had accorded "Drinking Water" as the first priority. Water resources projects should not be governed on the basis of benefit-cost ratio criteria. The views of the State Governments should also be taken care of in ILR projects. The guidelines should be framed in such a way that more water was made available to the State. NWDA Guidelines should be the benchmark and binding for all the States. He also mentioned that most of the water was available in monsoon months and the rainfall pattern had also been changed drastically in recent times. He, therefore, suggested that the water flowing down to sea unutilized should be used/transferred through the ILR projects.

Shri Sriram Vedire stated that the existing guidelines were exhaustive. These guidelines should be sent to all the member States of NWDA and their views should be obtained within a time frame. After receiving their views, the guidelines should be reviewed and deliberated upon in the meetings of Sub-Committee of System Studies for identification of most appropriate alternative plan. Thereafter, the revised guidelines may be put up to the Task Force. While finalizing the guidelines, the same should be viewed from technical, requirement of water, availability of water and political perspective.

Shri Virag Gupta stated that views in writing, say 3-4 pages, on the guidelines may be obtained from each member of the Task Force. Then, a summary of the same may be made and circulated in the next meeting of the Task Force. Thereafter, the guidelines should be finalized.

Chairman, CWC stated that the dependability criterion was different for various purposes. It was 100% for water supply projects, 90% for hydropower projects and 75% for irrigation projects. The distribution of available water should be such that it should be equitable and have higher dependability, which would provide more reliability. As regards cropping pattern, he stated that the farm productions were governed by market driven forces. It was very difficult to convince farmers for changing the cropping pattern. Therefore, the demonstration camps should be arranged for the farmers to educate them for adopting proper farming practices.

Chairman, TF-ILR stated that instead of planning cropping pattern for the project, maximum number of waterings could be decided and based on this,

farmers could decide cropping pattern and / or plan for supplemental water supply by them.

The representative of Gujarat stated that in Ukai project, initially the sugarcane was 15% of the total crops, which later on increased to 50%. The delta of the designed cropping pattern in the project was 0.6 metre which had increased to 1.4 to 1.5 metre in actual. This resulted in increase of salinity in the neighbourhood areas also. He stated that the cropping pattern adopted by the farmers was not in the control of the State Government. He further mentioned that earlier, water charges were levied on seasonal basis, whereas now, the water charges had been increased based on per hectare per watering and still sugarcane was being grown in the command of the Ukai project.

The representative of Maharashtra stated that the guidelines were necessary for formulating any project proposal. The geography and climate of the State/region should be considered in formulation of the guidelines. He informed that the culturable area of the State was 85 lakh ha, out of which due to topography and other constraints, only 10 lakh ha was planned. He opined that the lift, which was economically viable, should be permitted in the ILR projects. The regeneration from the irrigation projects should be based on the research reports. Some study had been carried out by Maharashtra in Sangli and Kolhapur districts, wherein the regeneration was reported to be about 26%. As regards the dependability criteria, he stated that the approach adopted by Krishna Water Disputes Tribunal-II should be followed. He mentioned that imposition of cropping pattern on the farmers would not work. However, supply of assured quantum of water should be provided to farmers for adopting specific crops.

The representative of Andhra Pradesh supported the criteria of 75% dependability for water availability in working out water balance in a basin, which would be more reliable. He stated that the cropping pattern was variable in his State. However, paddy crop was being grown, where there was plenty of water. The cropping pattern should be fixed for an ILR project and the diverted water should be used more judiciously.

Director General, NWDA stated that some of the States had raised for defining 'surplus water' for ILR projects. He added that the concept of integrated water planning was to be gone through while reviewing the guidelines. He suggested that the existing guidelines should be sent to member States for offering their views in a prescribed time and thereafter, the same may be reviewed by TAC of NWDA headed by Chairman, CWC.

Chairman, TF-ILR concluded that the existing guidelines should be sent to all the concerned States immediately for conveying their comments/views

within two weeks' time. Thereafter, the TAC of NWDA headed by Chairman, CWC should consider the comments/views of all the member States and revise the guidelines and submit the same to the Task Force for ILR. The Task Force would consider the revised guidelines in its next meeting proposed to be held in first week of June, 2016.

The meeting ended with a vote of thanks to the Chair.

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## Annex-I

### Participants of the Third Meeting of the Task Force for Interlinking of Rivers held on 28.04.2016 at New Delhi.

- |    |   |                  |
|----|---|------------------|
| 1. | Shri B.N. Navalawala,<br>Chief Advisor,<br>Ministry of WR, RD & GR            | Chairman         |
| 2. | Shri G.S. Jha<br>Chairman, CWC  | Member           |
| 3. | Shri Prodipto Ghosh,<br>Former Secretary, MoE&F<br>Distinguished Fellow, TERI | Member           |
| 4. | Shri SriramVedire,<br>Advisor,<br>Ministry of WR, RD & GR                     | Member           |
| 5. | Shri A.D. Mohile,<br>Former Chairman,<br>Central Water Commission             | Member           |
| 6. | Shri M. Gopalakrishnan,<br>Former Secretary General,<br>ICID, New Delhi       | Member           |
| 7. | Shri Virag Gupta,<br>Constitutional & Environmental Law Expert,               | Member           |
| 8. | Shri S. Masood Husain<br>Director General, NWDA                               | Member-Secretary |

#### Special Invitee :

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| 9.  | Shri R. Jeyaseelan,<br>Ex. Chairman, CWC   |  |
| 10. | Shri R. Vidyasagar Rao,<br>Advisor (Irrigation),<br>Govt of Telangana            | Representing<br>Govt. of Telangana   |
| 11. | Shri D. Rama Krishna<br>Chief Engineer,<br>Irrig. & CAD, Govt. of Andhra Pradesh | Representing Principal<br>Secretary, Irrigation &<br>CAD, Govt. of Andhra<br>Pradesh |

12. Shri R.V. Panse,  
Director General,  
Maharashtra Engineering Research  
Institute (MERI), Nasik, Maharashtra  
Representing Principal  
Secretary (WRD),  
Govt. of Maharashtra
13. Shri K.B. Rabadia,  
Chief Engineer (S.G.) &  
Addl. Secretary, Govt. of Gujarat,  
Ahmadabad  
Representing Secretary,  
WRD, Govt. of Gujarat
14. Shri Vinod Shah,  
Chief Engineer & Addl. Secretary (WR),  
Govt. of Rajasthan  
WRD, Govt. of Rajasthan  
Representing Secretary,

**Other State Government Officers :**

15. Shri Rajendra Pawar,  
Chief Engineer,  
Planning & Hydrology,  
WRD, Nasik, Maharashtra
16. Shri M.P. Samria,  
Executive Engineer,  
WRD, Govt. of Rajasthan
17. Shri D. Sankara Rao,  
Deputy Executive Engineer,  
Govt. of Andhra Pradesh

**NWDA Officers :**

18. Shri M.K. Srinivas  
Chief Engineer (South),  
NWDA, Hyderabad
19. Shri R.K. Jain,  
Chief Engineer (HQ),  
NWDA, New Delhi
20. Shri N.C. Jain,  
Director (Tech.),  
NWDA, New Delhi
21. Shri K.P. Gupta,  
Superintending Engineer,  
NWDA, New Delhi

22. Shri K.K. Rao,  
Deputy Director (H),  
NWDA, New Delhi
23. Shri N.P. Sahu,  
Assistant Director,  
NWDA, New Delhi
24. Shri M.S. Agrawal,  
Senior Consultant,  
NWDA, New Delhi
25. Shri K.P. Singh,  
Senior Consultant,  
NWDA, New Delhi
26. Shri M.K. Sinha,  
Senior Consultant,  
NWDA, New Delhi
27. Shri Nizam Ali,  
Consultant,  
NWDA, New Delhi.

# Inter-Linking of India's Rivers: Maximizing the Benefits

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## The Promise:

- Permanent solution to recurring problems of hydrological imbalance – droughts and floods
- Enable realization of India's global competitiveness and major share in agriculture
- *“Mother of all climate change adaptation strategies”*
- Enable integrated planning and management of surface, river, and groundwater resources
- Vehicle to remedy past distortions in water resources policy
- Can help promote broader agricultural and irrigation sector reforms

However...

- Apprehensions exist with respect to potential adverse environmental impacts: e.g. increased alkali-salinization of soil, pathway for dispersal of alien biodiversity species, increased geogenic infiltration (fluoride, selenium), regional and microclimate change
- There are also apprehensions of adverse social impacts – richer farmers may benefit, while the poor may be left out.
- Possible fiscal impact – estimate by the Suresh Prabhu Task Force was c. Rs. 250,000 crore. Present estimate may be much higher.
- Need to develop a financing model that will help ensure correction of distorted irrigation tariffs: PPP model with balanced risk sharing?

## Questions to be answered for the *programme as a whole*:

- Macroeconomic impacts – GDP growth, sectoral GDP growth, trade competitiveness, impacts on poverty and social equity, impacts on energy and agricultural inputs demands
- Optimal cropping patterns by State/region
- Regional environmental impacts across the entire country, and mitigation options
- Comprehensive assessment of hydrological impacts – surface, ground, river
- Regional climate change impacts, and potential of the programme to address adaptation in respect of hydrology

Due diligence required:

Macrolevel: Integrated Impact Assessment

- **Hydrological Assessment** (country as a whole):

- Regional climate modelling – impacts on precipitation, temperature, humidity, winds
- Hydrological modelling – integrated across river, surface, and groundwater

- **Crop modelling:**

- Optimal cropping patterns by region with and without ILR, climate change

- **Environmental impact assessment:**

- Cumulative environmental impact assessment of the plan as a whole

# Macrolevel Due diligence...

- **Social Impact Assessment:**

- Cumulative (income distribution across social classes, impact on employment at national level, impact on land values)

- **Macroeconomic Assessment:**

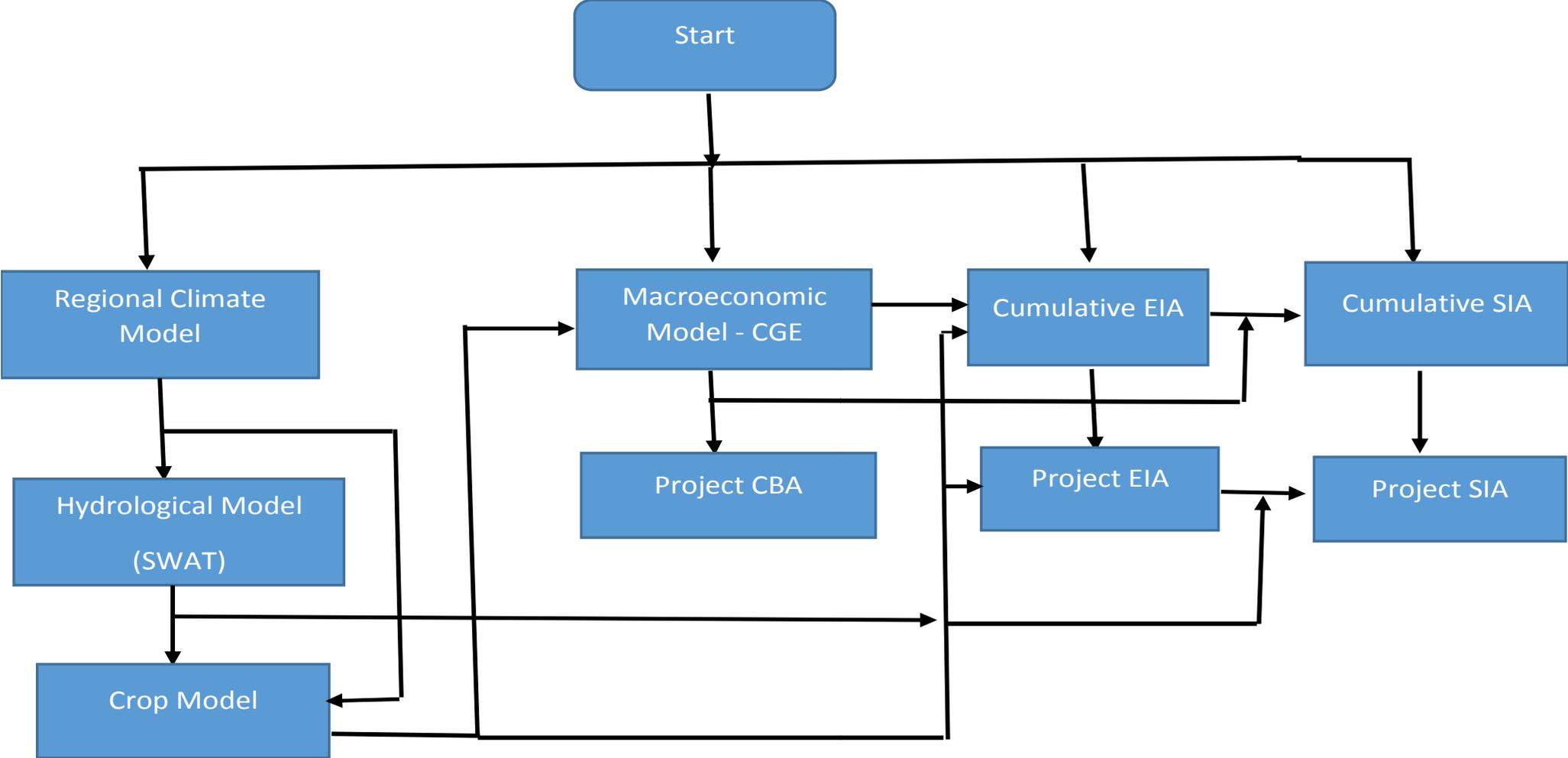
- Dynamic (over long time period), impacts on GDP growth and per-capita income, sectoral growth, distributive impacts, impacts on international trade, impacts on energy and agricultural inputs demands

- Feedback mechanisms to be incorporated

## Project level due diligence:

- Project level Cost-Benefit Analysis, with social discount rate appropriate to inter-generational impacts
- Basin level hydrological modelling for impacts on surface, river, and groundwater: options to maximize water storage during peak season
- Optimal cropping patterns in command area under various assumptions of water distribution
- Social Impacts Assessment inc. involuntary displacement, impact on jobs at project level, impact on land values, compensation, rehabilitation

# Schema of Integrated Assessment of Inter-Linking of Rivers



thank you