



# Irrigation Newsletter

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## NEWS UPDATE

### Irrigation Minister visited Babai Irrigation Project

Honorable Minister of Irrigation Deepak Giri visited Babai Irrigation Project in Bardia District on 7<sup>th</sup> January, 2017 (Paush 23<sup>rd</sup> 2073). The visit was accompanied by joint secretaries and other high ranking officials of ministry of Irrigation (Mol). Babai Irrigation Project (BIP) is one of the major irrigation projects in Mid-western region of Nepal and government declared it as national pride project. construction in 1990 and is still under construction.



It has been designed to irrigate 36,000ha of Bardiya District and now is irrigating about 30,000 ha at present, 12,500 ha in the Western part and 17,000 ha in the Eastern part respectively. The honorable minister was warmly welcomed by the Project Manager (PM) Mr. Dan Ratna Shakya. The project manager briefed about the present situation of the project and future plan of construction work in the project. During the visit, honourable minister also inaugurated a newly completed siphon structure at Parewa Odar at I+500 chainage of main canal system. In the brief function organized for siphon inauguration, honorable minister Mr. Giri directed all the staffs of BIP for timely completion of the project.

### State Minister of Irrigation Visited Dol



Honorable State Minister of Irrigation Mr. Surendra Raj Acharya visited Department of Irrigation on March 5<sup>th</sup>, 2017 (Falgun 22<sup>nd</sup>, 2073). On that occasion a special function was organized at Dol main hall. The function was chaired by DG of Dol, Mr Rajendra Prasad Adhikary in the presence of Mr. Ramananda Prasad Yadav, Secretary, Mol. Honorable State Minister was warmly received by the officials of Dol. During the function, DDG Mr Ashok Singh gave a welcome speech to the state minister. On that occasion, honorable state minister on his directive speech to the staffs of Dol, emphasized on necessity of great effort for achieving the national goal of development. DG Mr Adhikary, on his concluding speech as the chairman of the function briefly mentioned about recent development activities and historical achievement of Dol. At the end, DDG Mr Krishna Belbase, presented on brief introduction and present status of Dol.

### Ministry of Irrigation has a new secretary

As a decision made by government of Nepal on February 17<sup>th</sup> 2017 (Falgun 6<sup>th</sup>, 2073), Secretary of National Vigilance Centre, Mr. Ramananda Prasad Yadav has been transferred to Ministry of Irrigation (Mol). and the secretary of Mol

Mr. Gajendra Kumar Thakur has been transferred to the National Vigilance Centre. Secretary, Mr. Yadav has been promoted to the post of the secretary of Government of Nepal last year when he was Director General (DG) of Department of Irrigation itself. Prior to that, Mr. Yadav was DG of Department of Water Induced Disaster Management (DWIDM) and then was the joint secretary of Ministry of Irrigation. A special function was organized at Ministry of Irrigation on 21<sup>st</sup> February, 2017 to welcome newly



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## Editorial

### World Water Day 2017

Although two third of our planet surface is covered with water, only 0.1 per cent is consumable freshwater by living animals and plants. Out of which only little portion is available to us for consumption and large proportion is existing as snow in polar region and high mountain regions. Sharing of such dear resource among its various consumers, its wise and conserved usage is much demanding for start thinking and taking action to be implemented right now, because there is no alternate to water or freshwater for its multi users. So we should afford to conserve this scarce resource and prioritize its first users. There are some methods adopted at dry locations, where water is very dear to run their life. They use very fresh water for drinking and other consuming activities. They use recycled or reclaimed potable water for others like washing clothes, watering gardens and animals and cleaning floor. To conserve and effective use of the water, there are various guidelines and norms available for its various usages. For consumption purpose water is being treated and strictly ruled. For watering garden and animals its separate guidelines are made with continuous check on water quality maintenance. For cleaning floor and pavements bit low quality water might be applied with the application of antiseptics. Similarly, there are separate guidelines of maintained water quality for industrial purpose. Use and reuse of water after its necessary treatment is inevitable and is strict method to wise conservation of water. Continued research and study works are still being carried out for appropriate techniques to use and reuse of freshwater as well as wastewater according to various sectors of its usages.

Irrigation is a sector which uses largest portion of available freshwater. For irrigation, there is high demand of water or freshwater among its users, because irrigation is for the purpose to feed ourselves and animal. Various studies were made to apply used water or wastewater for irrigation purpose so as to conserve more freshwater at the location where water is much scares. According to study, the result showed enthusiastic. With the application of treated wastewater in irrigation gave similar or better result in crop production. So to cope with high demand of irrigation water for expanding irrigated crops, wastewater is being used as a good alternative. For many developing countries wastewater treatment techniques is found expensive as well as capital intensive. So various research works are being carried out to find cheap technology to treat wastewater or restricted rules to apply raw wastewater for irrigation. Use of raw wastewater also gives good result for agriculture production, because some wastewater found with its nutritious contents to cultivated crops, but such raw wastewater should also be checked prior to use. There is a slogan for World Water Day 2017 "There is no such thing as waste water; only water wasted". With the slogan we will be able to act to conserve and use this very dear resource wisely and make our lives further easy. ■

appointed secretary Mr. Yadav. Mr Yadav expected cooperation from all the employees and institution under the ministry as it was in the past. Similarly, a welcome function was also organized at Department of Irrigation on the following day, in which DG of Dol, Mr. Rajendra Prasad Adhikary expressed his well wishes to newly appointed secretary and also wished for the successful tenure in the ministry. Irrigation Newsletter Editorial board wishes all the successes of new secretary to Ministry of Irrigation during his tenure.

### Shital Drip Irrigation Invitation Program

An invitation program was organized by Shital Drip Irrigation Inc., Gwarko Lalitpur on 10<sup>th</sup> January 2017 (26<sup>th</sup> Paus, 2073). On the occasion, honorable minister of Agriculture Development Gaurishankar Chaudhary as the chief guest of the program, spoke on the appreciable work of Shital Drip Irrigation firm. He also emphasized the use of modern technology in irrigation to fulfill the gap between potential agriculture land and irrigable land. During the program, honorable minister and other invitees observed the production plants of various irrigation equipments for non conventional irrigation technology. Shital Drip Inc is producing such tools and equipments for last two decades. The firm manager and its employees requested formally for making such firm friendly policy through government process. Senior agriculture economist, Mr. Santosh Kokh-Shrestha represented from Dol in the function.



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## TRAININGS/WORKSHOPS/SEMINARS

### Orientation Training Program for newly appointed Sub engineers



An Orientation training program for newly appointed sub engineers has been organized at Dol main hall from January 22nd to 27th, 2017. The program was inaugurated by then secretary of Ministry of Irrigation, Mr. Gajendra Kumar Thakur. On the inauguration speech, secretary Mr. Thakur, expected that the training will be helpful for the participant to carry out their job easily in the field with clear vision. He also advised the participants that they should be disciplined in their job and job ethics. Chairman of the program and DG of Dol, Mr Rajendra Prasad Adhikary expressed his well wishes to the newly appointed sub engineers, for their successful career in the department. He also mentioned about brief history of Irrigation development in Nepal and expected full support from the new employees for the further development activities in irrigation sector. On the occasion, Deputy Director General of Dol, Mr. Bashu Dev Lohanee, welcomed all the participants and emphasized on the modernization of irrigation based on scientific basis for the promotion of irrigated agriculture in the country to enhance agriculture production. On the last day of the program, DG of Dol, Mr. Rajendra Prasad Adhikary congratulated to all the participants for successful completion of the training course and further he suggested the participants to contribute in the development of irrigation sector from various deputed areas considering it as an opportunity for future career development. DG Mr. Adhikary also distributed certificate to all the participants. During the closing ceremony, Ms. Jayanti Bharati and Mr. Lal Bahadur Oli also spoke on their respective experiences and views about the training program. There were altogether sixty participants participated in the program. During the training program, seventeen resource persons instructed on various topics like introduction and historical background of irrigation development in Nepal, introduction to Ministry of Irrigation, Department of Irrigation and its different divisions, division's works and field of works, various irrigation projects

running under Dol, their working modality and progress updates, different sections, including administrative section, financial administrative section and law advisory section with their respective works and progresses. Theoretical knowledge like headworks, canal design and construction design and quality control with technical auditing were also covered during the short period training program.

### Interaction Program for Irrigated Agriculture Model

With a view to enhance water users' capability build up and sustainable irrigated agriculture, an interaction program has been launched for the water users of Ripeni Dhotar Irrigation System in Sindhupalchowk District on December 15<sup>th</sup> and 22<sup>nd</sup> of 2016. There were altogether 35 participants including 30 female participants. Both the interaction programs has been organized with the help of former NARC executive director, Dr, Kedar Budhathoki, DDG of Dol, Mr Bashu Dev Lohanee, Engineer of IMD Ms. Sanchita Kaduwal, consultants Deepal Lochan Adhikari and Raajan Adhikari. The program was coordinated by Senior Technician Mr Rajendra Kumar Thapa.



### Initiation of Action Research at Kolphutar IS

With a view to automating the cultivation of various crops in the field to increase irrigation efficiency and , and save labor work, model action research has been started at the selected farmers' field of Kolphutar Irrigation System (KIS) in Nuwakot district from current fiscal year (FY 2073/74). For the implementation of the research, Nepal Agriculture Research Council (NARC) will play as supporting agency, a farmer's field school was run for the program launching in KIS, in which 58 farmers took part as participants. Resource persons were DDG of Dol, Mr Bashu Dev Lohani, SDE Rajendra Bir Joshi of Dol, Vikash KC and Muktinath Jha, Scientists from NARC, Sunil KC, Engineer from IDD, Nuwakot and ST Rajendra Kumar Thapa of SMTP who instructed farmers on various topics. Action research will focus on various activities like transplanting and sowing of crops, weeding, application of fertilizers, crop harvesting, threshing and drying with the help of



machine. Side by side, demonstration of such technology will be done to farmers field and the technology will be handed over to the farmers. The research program will last for 5 years to come.

### Capacity buildup training held for WUA of Atrauliputtar and Chapakottar ISs

A capacity build up training program for Water Users of Atrauliputtar and Chapakottar Irrigation Systems of Tanahu and Syangja districts under Community Managed Irrigated Agriculture Sector Project (CMIASP) has been organized by Irrigation Management Division for three days from February 14 to 16<sup>th</sup>, 2017 (Falgun 3 to 5<sup>th</sup>, 2073) at Chapakottar. In the training program, altogether 40 farmers has attended out of which 17 participants were from Atrauliputtar IS and 23 participants were from Chapakottar IS.



Subject matter of training program were namely procedural guidelines of CMIASP, System Management and Management Transfer, Organizing Water Users' Association and its operation process, account management, Canal operation and maintenance action plan preparation, construction management and quality control, gender and ethnic focused survey data collection and its interpretation. The training resource persons were SDE Rajendra Bir Joshi, Senior Sociologist Bimal Ram Dhewaju from Irrigation Management Division of DoI, CMIASP Consultants Deepak Pandey and Bhupendra Gauchan and Accountant Jwala Prasad Ghimire of SMTP, who contributed on various subjects to the trainees. The program was coordinated by Senior Sociologist Mr Bimal Ram Dhewaju.

### IWRMP Review Workshop on Irrigation Management Transfer

A three days' review workshop of IWRMP has been organized from November 22 – 24<sup>th</sup>, 2016 at Hotel Denovo of Butwal, Rupandehi District. Chief guest of the program and Director of Irrigation Management Directorate, Mr Niaj Warish inaugurated the workshop. The workshop was attended by Project chief Shashi Bahadur Bishta, SDE of WIRMP, Tikaram Baral, Senior Sociologists Chetman Budthapa and Benu Paudel of DoI, Project Coordinator of Department of Agriculture Mr Rajendra Mishra. Division Chief of Kankai Irrigation Management, Mr Birendra Yadav, Division Chief of Narayani Irrigation Management Division, Madan Mohan Jha, Division Chief of Mahakali Irrigation Management Division, Mr Ram Krishna Ghodasaini, SMU Chief of Sunsari Morang Irrigation System Mr Shri Prasad Sah, Deputy team leader of TA team of IWRMP Mr Rishiram Sharma Neupane participated as paper presenters in the program. Engineers, Senior AOs and AOs of related offices also attended the workshop Program.



During the inaugural session of the workshop, chief guest of the workshop, Mr Warish in his inaugural speech expressed well wishes for the success of the program and expected for the invaluable information of importance of workshop and its implementation status. Project Director Mr Bishta spoke on future modality of water users' work for the canal operation and maintenance to distribute water to the farm crops of water users after its turn over to Water Users' Association. The situation after turn over will be more challenging but optimistic for the successful launch of the program. Project Agriculture sector Coordinator Mr Sah expressed the successful launch of Farmers' field school and also mentioned about the program which will make good impact on farmers to help change crop cultivation pattern to more market oriented one.

During the technical session of the workshop participants presented their respective papers in first two days. On the third or final day of the workshop, general discussion and review was made on presentations. Deputy team leader of TA, Mr Neupane presented overall status of the management transfer program. SDE of IWRMP Mr Baral reviewed on overall status of management transfer program under IWRMP. During the session, participants divided into four sub groups for major Irrigation Systems under program and further action plan was prepared for respective systems for next two years.

## FEATURE ARTICLES

### Irrigation Management Vision and Strategy According to 14<sup>th</sup> Plan (FY 2073/74- 2075/76)

✍ Risi Ram Sharma Neupane

#### Irrigation for Sustainable Agriculture

Agriculture is the main stay of Nepalese economy. It contributes to 33% of GDP, provide food of many and employment to 65.7% of the population and also 50% experts earning is based on agriculture. Despite agricultural sector being so important to us it is facing great challenge to provide adequate food and livelihood to growing population because unreliable inputs of production factors of which irrigation is one very vital but irrigation sector is suffering from the following issues and problem.

- Declining state of irrigation system performance and agricultural productivity
- Inadequate O&M budget flow for standard irrigation scheme performance sustainability
- Poor cost recovery due to poor irrigation service.
- Traditional and inefficient technology input for canal operation and irrigation service delivery.
- Traditional concept & approach to WUA development

Realizing the importance and understating of the present issues of irrigation to sustain agricultural yield and production, National Planning Commission, Nepal has brought a three years 14<sup>th</sup> plan with good vision, goal and strategy specifically for completed irrigation schemes as stated below.

#### The Goal Set in 14<sup>th</sup> Plan

- Reaching to 1.520 million ha under irrigation facilities by 2075/76 from the present area of 1.339 million hector.
- Support to agricultural productivity and production by reliable and sustainable irrigation service to users
- Increasing performance sustainability of the completed irrigation scheme by strengthening/ modernizing irrigation management.

#### Strategies Proposed in 14<sup>th</sup> Plan

To achieve above goals the following strategies and approaches are proposed:

- Ensure water users participation for sustaining irrigation system O&M and management.
- An irrigation development fund will be established for irrigation system O&M and rehabilitation supports (page 70).
- Small and medium irrigation scheme will be implemented with irrigation WUA cooperatives for integrated economic development of users.

- Similarly, large and major irrigation schemes will be managed by Autonomous Irrigation Management Board.

In order to manage completed irrigation systems in line with the strategies of 14<sup>th</sup> plan DOI might need certain preparation to comply with new mode of approaches required for sustainable irrigation management service to agriculture sector as follows:

- Prepare database of all FMIS, SIP, MIP and large projects for planning and decisions.
- Project categorization for irrigation board concept application.
- Policy and Act amendment to implement new approaches such as Co-operatives and Irrigation Board.
- Development of procedural guidelines and manpower capacity for new concept of irrigation management.
- Initiation of dialogue with donors for new approach oriented project rehabilitation and modernization.
- Reorganization and strengthening of existing DOI's management units in time along with new concept and strategy.

\* Mr. Sharma Neupane is Deputy Team Leader of IWRMP Component B

### DESAWAR

#### (A traditional practice of labor contribution in Rani Jamara Kulariya Irrigation System, RJKIS)

✍ Gauri Lal Upadhyay

#### Background

Rani Jamara Kulariya Irrigation System is one of the largest irrigation system developed and managed by farmers themselves. The scheme suffers from frequent wash-out of temporary diversion works, shift of river course at the head of the main inlet (diversion) channel, erosion of canal banks, sediment deposition at the intake and the canals after every flood. As a result, the existing scheme is facing the problems like difficulty in diverting water to the irrigation system, uncontrolled flooding and sediment entering into the system, problem of the water distribution equitably and efficiently, etc.

With this background, the farmers of RJKIS have requested Government of Nepal (GoN) for support in rehabilitation and upgrading of the system. To address the demand of farmers the GoN has requested World Bank for financial assistance. Dreams comes true over a time. The project was approved and work of system modernization is going on.

#### The System

The Rani, Jamara and Kulariya Irrigation System (RJKIS) constitutes three traditional irrigation systems constructed, operated and managed by the indigenous Tharu community. The scheme was developed by the farmers between 1896 AD (Rani System) and 1915 AD (Kulariya System). It commands around 11000 ha

at present. There are three canal system which comprise 48 branches and more than 800 sub branches in this system.

**Traditional Practice of Irrigation Management:**

Indigenous Tharu community have traditionally managed these three Canal systems (Kulos). They have been organizing labor camp for operation and maintenance of the system every

present WUA vice president who support to main Chaudhari and work in the capacity of Chaudhari in his absence.

**Badghar:** Community/Settlement (Mauja) head who is responsible for all community affairs including irrigation management. There are 152 badghar at present within the command area. Each Mauja select badghar in the month of February every year. It is also a volunteer position.



year since the beginning which is still continues. Community has developed a set of rules regarding farmer's participation. Followings are important actors for the operation and maintenance of the system.

**Desawar:** Collective masses of water user farmers who collectively donate labor for operation and maintenance of the system.

**Chaudhari:** He is a Canal head or Chief. Chaudhari is a voluntary position. Now community does not select Chaudhari and assistant Chaudhari as previous. WUA president and Vice President recognized as traditional post Chaudhari and Assistant Chaudhari at present. Even though the Chaudhari system is an indigenous Tharu practices, recent settlers from the hills also have adopted it. Each Chaudhari are supported by the following members:

**Assistant Chaudhari:** Assistant head of Canal or equivalent to

**Chiragi:** Responsible for disseminating information regarding irrigation management to the mauja (or settlement) level. Chiragis are annually paid in kind (certain amount of paddy harvest from each household).

**Guruwa:** A priest responsible for conducting irrigation related rituals during Desawar.

**Nandarwa:** Responsible for work allotment and determining volume of work for each settlement or Mauja. It depends on the size of the village and its total population?

**Bhansariya:** A Cook who looks after kitchen during Desawar. His/her duty to prepare food for the workers in the working site.

**Organ:** Who is responsible to serve drinking water to the workers at the time of Desawar.

**Lekhandar:** Responsible person to keep record of farmers who is participating in desawar. He takes daily attendance of farmers during desawar.



#### **Desawar process:**

The WUAs at different level are responsible for the maintenance works throughout the system. Maintenance work along Chisapani is held every year. Other types of canal repair and cleaning work in branch and sub branch level are carried out as and when necessary. In such maintenance works at branch and sub branch, only concerned farmers have to mobilize.

Maintenance work at Chisapani is much more demanding than other repair and maintenance works at branch and sub branch level. It requires several days (in the past several months) for thousands of people. Badghars are responsible for mobilizing users of their settlements for this maintenance work.

Generally two week before, main WUA call a joint meeting of its member and budghars and decides the date for Desawar. Decisions are circulated to the Branch Committee who in turn circulated this information to respective Budgharabd Chiragi. Chiragi spreads this information to all farmers of their respective settlement. Budghar and Chiragis do all preparation whatever required for Desawar and mobilize concerned farmers to the work site. They goes for Desawar with necessary food stuffs, clothes, tents, utensils, etc.

Whenever all farmers gathered in the work site at Chisapani work is divided between different settlements by Naandar (person who measure the work volume). They start digging channel in proper area as marked by the Naandar. So they works until the channel digging is not completed.

After completion of work, they perform a ritual in the day of water diversion. A Tharu priest (Gurwa) worship Jal Dewata (Water God) with offering the sacrifice of pigs, goats and fowls.

#### **Water Users Association:**

Beginning in the mid-1980s, a Water User's Association (WUA) appeared in this system. Local users established these committees in Rani, Jamara and Kulariya system as well as one main WUA as a coordinating body. Those WUAs have their own constitution and formally registered under the law of land. Recently all of previous constitutions were amended and new committees at different level existed as a provisions of new constitution. Now there is one main committee, three branch committee and 48 sub branch committee are formed. At present the WUA have evolved into hybrid institutions; a mix of traditional practices and modern WUA systems.

**Conclusion:**

Rani Jamara Kulariya Irrigation System is unique by nature in many instances. It was one of the old irrigation system of Nepal, it was constructed purely with a local resources and local technology. It is one of the largest farmer managed irrigation system of the country. Labor contribution system is highly considerable and intact even at this modern age. It is going to be developed as a multi purposes entity. Unity of farmers is much considerable in

comparison of other irrigation systems in the country.

Desawar is one of the most important community endeavor in this regards. As construction work is in progress it is expected that the days of hardship of local farmers will be over in near future. But unity of farmers and traditional value system must be maintained in the future. Because huge networking of canal system requires more unity and strength of farmer to maintain it.

**\*\* Mr. Upadhyay is Senior Sociologist, RJKIP**

**FORTHCOMING EVENTS**

International Conference on Studies in Disaster Management, Civil and Architectural Engineering (SDMCAE-17) April 18-19, 2017 Kyoto, Japan Website: <http://drcaee.org/conference/161> Contact person: Cathy Parn Organized by: DRCAEE

5th International Conference on Waste Management, Ecology and Biological Sciences (WMEBS-2017) ISTANBUL – Turkey, 17th to 18th May 2017, Istanbul, Turkey , Website: <http://wmebs.eacbee.org/> Contact person: Alissa Matthew, Organized by: Emirates Association of Chemical, Biological & Environment Engineers

5th International Conference on Chemical, Agricultural, Biological and Environmental Sciences (CAFES-17) April 18-19, 2017 Kyoto (Japan) 18th to 19th April 2017, Kyoto, Japan Website: <http://drabl.org/conference/160> Contact person: Bella Martin Organized by: Dignified Researchers in Agricultural, Biological and Life Sciences

2017 8th International Conference on Environmental Science and Technology (ICEST 2017) 12th to 14th June 2017, Madrid, Spain, Website: <http://www.icest.org/> , Contact person: Ms. Iris Tang, Organized by: CBEES, Deadline for abstracts/proposals: 20th March 2017.

6th PARIS International Conference on Chemical, Agricultural, Biological and Environmental Sciences (CABES-2017) April 25-26, 2017 Paris (France) 25th to 26th April 2017 Paris, France Website: <http://www.iicbe.org/2017/04/25/90> , Contact person: Conference Secretary: CABES-2017 Organized by: IICBE

26th International Conference, 23rd to 27th June 2017, Elenite, Burgas, Bulgaria, Website: <http://www.sciencebg.net/en/conferences/ecology-and-safety/> , Contact person: Svetoslav Ivanov , Organized by: International Scientific Events, Bulgaria.

5th International Conference on Urban Planning, Transport and Construction Engineering (ICUPTCE'17) May 2-3, 2017 Pattaya (Thailand), 2nd to 3rd May 2017, Pattaya, Thailand Website: <http://icuptce.urcae.org/> Contact person: Conference Secretary: ICUPTCE'17 Organized by: URCAE

2017 International Conference on Water Resources Management 18th to 20th July 2017, Prague, Czech Republic, Contact person: Irene Moreno Millan, Website: <http://www.wessex.ac.uk/conferences/2017/water-resources-management-2017>

International Research Conference on Civil, Architectural and Environmental Engineering (IRCCAEE-17) May 17-18, 2017 Istanbul (Turkey), 17th to 18th May 2017, Istanbul, Turkey Website: <http://drcaee.org/conference/142>, Contact person: Cathy Parn, Organized by: DRCAEE

2017 7th International Conference on Environmental and Agriculture Engineering (ICEAE 2017), 28th to 30th August 2017, Bangkok, Thailand, Website: <http://www.iceae.org/> , Contact person: Ms. Sophia Du Organized by: CBEES , Deadline for abstracts/proposals: 20th April 2017

Sixth International Conference on Climate Change Adaptation 2017 16th to 17th September 2017 Toronto, Canada, Website: <http://www.globalclimate.info/>, Contact person: Prabhath Patabendi, Organized by: Unique Conferences Canada , Deadline for abstracts/proposals: 15th April 2017



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