Comments on Proposed CDM status for 300 MW Panan Hydro Power Project

After reviewing the PDD, the suspicion already surrounding this controversial development project has been only sharpened and refined. The project does not deserve CDM status. The basis of our conclusion is as follows:

1. The project is facing huge opposition and unrest in the specific area of Dzongu where it is coming up, the PDD has not mentioned anything about this. The Project is located in the heart of the protected indigenous Lepcha tribal reserve called Dzongu. The Lepcha people have been protesting vehemently against the project since its inception. Please see their blog: www.weepingsikkim.blogspot.com. A marathon hunger strike of 915 days was called off after the government assured the protestors of negotiations. The protest still continues and legal actions are on the anvil against the project developer. The protest will continue until the project is scrapped.

2. The project will affect the culture, demography and social fabric of the Lepcha people, who have become minority in their own land. Not only that, the project will also affect the fragile ecology of the place. The Kanchenjunga National Park and Biosphere Reserve forms a major part of the protected reserved land of Dzongu, which is considered as the last bastion of the Lepcha people. The PDD does not mention this.

3. The project developers have also not obtained the Clearance from the National Board of Wildlife in context of the project being located within 10 KM of the Kanchenjunga National Park and the Biosphere Reserve. According to a 2006 ruling of the Supreme Court of India, any developmental project located within 10 KM of a national park should obtain clearance from the National Board of Wildlife Standing Committee. Without this clearance the company cannot start work. The PDD does not mention this and the project developer would be violating the Indian law if they go ahead with the project without getting this clearance.

4. The villages in the vicinity of the project have suffered massive destruction and casualty during the 18th September 2011 earthquake measuring 6.9 in the Richter scale. The situation was aggravated by the use of explosives during the investigative work for this project and other projects under constructoin which had had tremendous effect on the already weak geology of the region. These villages still face connectivity and communication problem. The PDD fails to mention this.

5. The project developer is yet to submit geological and GLOF (Glacial Lake Outburst Flood) study report also which had been ordered by the Central Electric Authority of India. The PDD does not mention this and thus is seriously inadequate. By not mentioning the crucial issues listed in points 1-5 above and others below, the project is clearly violating the current Verification and Validation Manual of the UNFCCC[1]. Moreover all these are crucial aspects that the project developer needs to inform the affected people before an informed consultation is possible. Since the project developer has failed to include these crucial issues in the PDD or the EIA with any degree of adequacy or completeness, they have also failed to achieve adequate consultation as required under UNFCCC norms and Indian law.

6. The company Himagiri Hydro Energy Pvt. Ltd has no previous experience of hydro power project building. The company has not achieved its financial closure till date, in violation of the MOU which was

[1] Clean Development Mechanism Validation and Verification Manual, Version 01.2, EB 55 report

signed in 2005 between the company and the government. Hence no work has started on the ground. The PDD does not mention this.

7. There are 27 hydroelectric projects proposed in the Teesta basin and many of them operating or are under construction throughout the state of Sikkim. The various components of the projects, including the dams, tunnels, the approach roads and bridges resulted into disturbance and destruction in the physical habitat of both forest dwellers and aquaculture. The construction of dams and reservoirs for water storage, power generation and diversion for other usage can affect flow and depth of the water. It also changes the drainage characteristics of watershed and may lead to more run off and fluctuation in river flow rate.[2] There has been no credible cumulative impact assessment of these large number of projects keeping in mind the socio economic situation in the state. The PDD does not mention most of these crucial impact of the project, nor the cumulative impacts.

8. Informational Errors: The information provided regarding land is misleading—in one instance, in the environmental impact analysis (see p. 31 of the PDD) the company states "The project activity involves construction of 115m high dam leading to submergence of **13.4 Ha** which comprises 5 Ha of dense forest. In addition **6.67** Ha of land, required for building and construction purpose." This would lead one to believe that the project requires 20.07 Ha of land total—out of which 5 ha is dense forest. However, later on the company states that the "total affected families due to various activities of the PHEP are 77 with total extent of loss of land of **35.933 Ha".** The PDD has many such discrepancies, violating the UNFCCC norms.

9. It is concerning that the company feels comfortable with crude statement such as "with the submergence area being less there would be minor impact". Aside from the fact that the total submergence area has nowhere in the PDD been properly stated—which would have to include backwater effect during monsoon season (omitted), the company lacks an ecological understanding of the geography and biological impacts due to the project. For one, the effect of forest loss is not only a function of quantity of land submerged, but also the quality—the land near river beds is supposed to be the most ecologically diverse area. Further, the effect of deforestation that comes with the creation of transmission lines, access roads, and other parts of the project exacerbates fragmentation and increases the rate of invasive species growth and habitat loss. None of these impacts of the project are mentioned in the PDD.

10. It is relevant here that the District of North Sikkim where the proposed project will be, has been declared a "high priority", biologically rich area.[3] In 2008 the Department of Forest, Environment and Wildlife Management, Sikkim, commissioned a study in which the biological pressures present in this specific district were highlighted in depth. According to the study, wild fauna, a host of ***essential medicinal herbs***, and cattle are already "…threatened due to reduced grazing niche already occupied by large-bodied wild herbivores". As the proposed hydro power site is just on the border of India and Tibet, "the closure of the border to trans-humance[4] over the last four decades has led to intense grazing pressure by both the domestic and wild herbivores on the limited resources of the land…The area also suffers from the presence of loosely fenced land-mined areas causing casualties among yak, Tibetal argali, kiang, and Tibetan wolf".[5] The PDD does not mention any of these crucial facts.

---

[2] http://www.sikenvis.nic.in/Reports%20and%20Publications/Biodiveristy-of-Sikkim/12%20Fish_221-232%20web.pdf
[3] www.gbpihedenvis.nic.in/HTML/vol13_1/BIODIVERSITY.pdf
[4] "**Transhumance** is the seasonal movement of people with their livestock between fixed summer and winter pastures", according to: http://en.wikipedia.org/wiki/Transhumance
[5] http://nopr.niscair.res.in/bitstream/123456789/2964/1/IJTK%208(1)%2051-55.pdf

11. Aside from the question of whether a hydro power project of such massive scale should be constructed in an area prone to trans-border disputes, this raises the ecological question of carrying capacity and population pressures that are already a reality in this district. Another study titled "Carrying Capacity of Teesta River Basin" conducted by University of Delhi but commissioned by the Ministry of Environment and Forests, Government of India sheds light on some aspects of this issue. Although the quality of that study leaves a lot to be desired, some aspects are noteworthy. It is stated in the study, "there are around 154 species of mammals in Sikkim belonging to 26 families. Of these, almost half are found in North Sikkim", *the same district in which the 300 MW Panan HEP is proposed*, "excepting moles, shrews, bats, some squirrels, rats and mice, most are listed in the Indian Wildlife (Protection) Act 1972 as amended up to 1993. Therefore, this shows the degree to which the mammals of Sikkim are endangered today. All the wild cats found in North Sikkim are listed in Schedule-I of the [Wildlife Protection] Act. Altogether, 16 species of mammals from North Sikkim are listed under Schedule-I of the Act; more than 18 species are under Schedule-II; some are rare and 1 species viz. Sikkim stag is already extinct." The report then goes on to list details about the endangered birds, reptiles, amphibians, fish, butterflies and "other invertebrates" of the Teesta River basin—some of which including the *Ichthyophis sikkimensis* are "not found anywhere else in the world". The PDD is silent on these crucial issues and thus does not fulfill the UNFCCC requirements.

12. There are host of other news reports, studies, and common accounts that are a testimony to the importance of Teesta River fisheries—for example, one report titled, *Fish Biodiversity as an Indicator of Riverine Status of Sikkim,* compiled explicitly with the framework of analyzing what destruction may come with the 27 proposed large hydro power projects in the Teesta River basin, provides a detailed outline with pictures of the fisheries in the Teesta River basin. It lists the dominant fish species in Teesta and Rangit tributaries as *Schizothorax spp (*Asala*) Neolissocheilus spp (*Katley*), Garra spp (*Buduna*), Pseudecheneis spp (*Kabrey*), Barilius spp (*Chirkay*), Semiplotus spp (*Chepti), and the ornamental species as *Barilius bendelisis bendelisis, Barilius vagra, Danio aequipinnatus, Danio naganensis, Garra lamta, Noemacheilus scaturigina and Noemacheilus sikkimensis*" (See Annexure 1 for the list).[6] On top of this, the confluences of the Teesta River (specifically those in Sikkim) are nationally recognized as some of the most fruitful angling (sports fishing) spots in the country and fish such as giant mahaseer[7] have been reported as catches in recent years[8]. This range of fish biodiversity is made possible, claims Toppo et al. by the "clear cold waters in the foothills [of the Himalayas] without any striking modifications to current". These are aspects are absent in the PDD.

The majority of the above mentioned reports focus on the striking array of wild edibles which are present in the district, from which locals get much of their daily nutrition. As shown in the PDD the PP has not considered these losses—for example what loss will the dam have on the forest lands that line both sides and utilize water from both ground and surface water of the 9,549+ meter stretch of the river that will be totally lost and diverted into concrete tunnels? What impact will the loss of downstream flows have on these species? Without all this, the PDD fails on the UNFCCC requirements.

13. The people who depend on the medicinal herbs in the project expanse will be adversely affected. Fragmentation is very common effect of dam construction—and certainly the herbs that the state is seeking to protect will come under pressure if not be totally eradicated by the project. The PDD does not mention this and the medicinal herbs preservation plan mentioned in the PDD will not be helpful in this.

---

[6] http://www.sikenvis.nic.in/Reports%20and%20Publications/Biodiveristy-of-Sikkim/12%20Fish_221-232%20web.pdf
[7] http://www.telegraphindia.com/1110101/jsp/siliguri/story_13377150.jsp
[8] http://himalnews.wordpress.com/2010/03/05/mahaseer-at-teesta-guess-what-it-weighs/

14. The nomadic grazing population (called the *Dokpas*) has developed a system of imposing fines and fees on those who irregularly graze due to the important and delicate existence of certain medicinal herbs including the *Nardostachys grandiflora, Picrorhizakurroa, Juniperus prostata, Podophyllum hexandrum, Rhododendron setosum,* and *R. nivale*. The locals behavior indicates that they have a strong understanding that overgrazing could have devastating impact on the North Sikkim society which depend on these species for survival.[9] If grazing has posed such a severe threat (as documented in the previously mentioned study), how can a 300 MW, 115 m high concrete dam be "environmentally sound"? The proposed hydro power scheme is insensitive to this dire reality of North Sikkim locals and should not be considered socially beneficial or compliant with the requirements and norms of Clean Development Mechanism.

15. While this project is locally devastating to the weakest members of Indian society, indigenous people of the North East region, its international repercussions would also be noteworthy. The Teesta River, to which the Tolung Chu is a tributary, drains 12,729 sq.km up to its confluence with the Brahmaputra—83 per cent of its catchment lies in the Indian side and 17 per cent is in Bangladesh. "While there is no dearth of water during monsoon, there is shortage during the lean period for which an agreement on sharing is being worked out" reports *The Hindu*. The report continues, "In July, 1983, both sides reached an understanding on an ad hoc sharing of the Teesta flows during the lean period with an allocation of 36 per cent for Bangladesh and 39 per cent for India, leaving 25 per cent to be decided later. However, *this has remained unimplemented for differences over the data of water flows.* Both sides are now striving to arrive at an agreement on flows in the lean season, after taking into account changes due to climate, as well an understanding on water flow data." Given the ongoing negotiations and discrepancies in data regarding the River Teesta even among the *governments* of both countries, it would be incorrect for the PP to assume that the proposed mega dam would not exacerbate the pending crisis. In fact the reports from the downstream Indian state of West Bengal show that such projects will actually reduce water available in the river at the border. The PDD has not looked at any of these issues. The finite amount of water in this river basin, and the dire situation in both of the affected nations begs the UNFCCC and the national CDM authority to end all consideration for projects like 300 MW Panan HEP.

In sum, if the UNFCCC were to validate this project, the consequences would be trans-national—and there would be no shortage of opposing voices from the region to bring these consequences to the fore. It is advised that, for the sake of their reputation, the UNFCCC executive board immediately omit the PP's proposal from CDM consideration.

16. The project is proposed in an extremely high elevation area prone to landslides and earthquakes. The company has also shared no plan of action if a dam break happens. The makes the PDD inadequate.

The above analysis makes the company's statement, "The purpose of the project activity is generation of clean energy by tapping the potential of natural resources… through sustainable means without causing any negative impact on the environment. Therefore, the technology is environmentally safe and sound" look like green-wash.

17. The negative social impacts of large dam building is not limited to those who lose their rivers and land due to the submergence associated with the dam. In fact negative health impacts begin right from

[9] http://nopr.niscair.res.in/bitstream/123456789/2964/1/IJTK%208(1)%2051-55.pdf

the arrival of large numbers of construction workers into remote areas, most of which will be poor, unskilled labourers who , especially in tropical areas (like the proposed project site of Sikkim) commonly carry a wide range of infectious diseases such as tuberculosis, measles, influenz, leishmaniasis, syphilis, and AIDS. Some of these are likely to be new to the region and local people may have little immunity to them, let alone access to quality, affordable health services.

Dams requiring reservoirs with stagnant pools of water, often lead to a range of sicknesses including malaria, files, worms, parasites, schistosomiasis, which has worldwide been linked to dam construction. The PDD is silent on these issues.

18. Working on dam sites is also no easy lifestyle—workers often face the risk of death and injury "inherent in most dam projects". The World Bank's Industry and Eneergy Department admits that worker deaths are unfortunately common in all tunneling, dam-building, and earth-moving activities. India is no stranger to this appalling trend, large number of workers have died in Sikkim, including at Teesta 3, Chuzachen[10] hydro projects. In current (2012) monsoon, 19 workers washed away at under-construction Assi Ganga Hydropower project in Uttarakhand, two workers drowned dead in desilting chamber at 5 MW hydropower project in Kinnaur (Himachal Pradesh) and a dam company engineer was washed away downstream of the Baglihar hydropower project in Jammu and Kashmir, to name just a few. The PDD is silent as to what measures the company is taking to ensure such incidents do not happen at the project.

19. From the PDD, we can gather only vague information about the nature of the land that will be lost to the project—we know at least 5 ha of "dense forest" will be lost. In India, where the poor collects a majority of their firewood from commons land, and they meet up to four-fifths of their grazing needs by using commons land, the loss of forest land should be vigilantly addressed. The PDD has failed to assess these impacts or suggest compensation measures and should thereby disqualify the project from CDM considerations.

20. In the environmental impact assessment section of the PDD, instead of providing a legitimate assessment with figures that would help determine factors such as number of trees cut, backwater submergence area, total length of the river that will be submerged, etc the company makes broad statements about mitigation (not about impacts) that show the grossly incomplete nature of this PDD. For example, "The proposed diversion dam is expected to change the habitat conditions to some extent in the stretch immediately downstream of the dam site. In order to maintain ecosystem, *sufficient amount of discharge will be released*." And "proper sewage disposal systems are proposed". "Muck generated…will be dumped in an environmentally sound manner" and "proper maintenance of vehicles" will minimize air pollution. This is clearly inadequate and unacceptable and disqualifies the PDD as it does not provide basic information about the project impacts or management plans.

21. The impact dams worldwide have had on fisheries has been devastation. When one turns to this PDD, the section which is to analyze the impact on aquatic wildlife and fisheries, is quite disturbing, with again the reiteration of vague claim about "sufficient flows"—sufficient has been considered by some developers to be a mere 10% of the minimum observed flow which is totally insufficient to maintain biodiversity. PDD claims that the company has started work on a baseline study of the river (see p. 33 of the PDD), but the information provided here not only is contradictory but it is, inconclusive, insufficient, and vague. For example, in said section it is stated that "'Schizothoraicthys progastus', 'Schizothorax

[10] http://www.sandrp.in/dams/Chuzachen_Hydro_Dam_Collapse_in_Sikkim_April_2009.pdf

richardsonii' and 'Acrossocheilus hexagonolepis' are known to perform local migration", whereas on p. 31 it is stated that "No migratory species are found in the Tolung Chu river." It goes on to state, "the impact [of the dam on fisheries] is negligible" but at the same time it introduces the concept of "conservation" of affected migratory species and "snow trout" through "establishment of fish farms, reservoir fishery and hatchery development" and "by maintaining sufficient flows". It is clear that PDD is incomplete in this respect too and the proposal should be rejected.

22. Studies of riverine ecology have time and time again revealed that "in-stream flows" often do little to recreate the habitat of essential wildlife, because of the arbitrariness with which they are released and the poor timing—releases which happen for the joint purpose of flushing away rocks or silt build up during dry seasons does more harm than good for the local ecology. The PDD fails to even mention a number for flow releases, how this will happen, and how will it be ensured that the releases happen as promised. In reality, a thorough study should have been done to assess the potential of the development of a fish ladder—which would only be a start.

If the company was actually as confident about its purported environmentally sound nature of its project, then it would not make such vague and broad statements that give no idea what state the river basin will be after construction of Panan HEP.

23. In the section titled, "Degradation of land due to change in drainage pattern and soil erosion" the PP has listed standard measures followed by big dam developers like CAT plan, but lists no measures by which they will ensure implementation of this plan in participation with the local people. They even state, irresponsibly, "Submergence area being less, there would be minor impact"—the submergence area that results from a 115 m concrete wall is not a small deal.

24. **Non additional**: Considering the large number of hydropower projects coming up in Sikkim in particular and North East and rest of India in general, and considering that the project employs business as usual technology and considering that such projects get huge incentives and benefits from the government, the project is clearly non additional. This project would have anyway come, even if CDM credits were not available, as is clear from all this.

Large hydropower is common practice in India. The common practice analysis should cover the entire country, not just the small state of Sikkim. The CDM Executive Board issued guidelines on common practice at its 63rd meeting which specify that the "(a)pplicable geographical area covers the entire host country as a default." Since the development of hydropower in India is determined through a centralized planning process, including transmission planning, a national assessment is most appropriate. The Central Electricity Authority's Hydro Development Plan for 12th Five Year Plan (to be implemented during 2012 to 2017) documents which projects are planned to be built in each state of the country. Over 100 projects totaling 30 GW of hydropower are planned to come on line in the country during the 12th Five Year Plan (2012-2017). Eleven projects, totaling 2.5 GW, are planned in Sikkim. Focusing just on Sikkim and just on projects between 150 MW and 450 MW provides a disingenuous and implausible assessment of common practice, and does not follow CDM EB guidelines.

25. In India, as per the Electricity Act 2003, such projects follow the cost plus approach in fixing the tariff. In this approach the developers are assured 14-16% return on equity, in addition to allowing the all the costs of the project, including the cost of the capital, while calculating the costs, the return on equity is added to this while fixing the cost. Hence, the claims of the PP that the project would not be

viable without the CDM are completely wrong. The hydropower projects in states like Sikkim also enjoy a lot of additional incentives and benefits.

26. A high level delegation of SIBLAC had a series of meetings in Delhi recently with senior government functionaries in the Ministry of Environment and Forest including Mr. Salman Khurshid, Union Minister in charge of Minority Affairs in the country on several issues concerning indigenous Minority Bhutia-Lepcha people. While demanding the Dzongu Region to be declared as National Heritage Site, the group has also demanded to scrap the 300 MW Panan Hydro Power Project in Dzongu on the following grounds:

A. **Dzongu – safe haven for indigenous minority Lepcha** Dzongu is is considered as the safe haven of indigenous minority Lepcha people. Following a royal proclamation by Tashi Namgyal, then chogyal of independent Sikkim, in 1958 the State Home Department pledged to protect the Dzongu area by, among other things, restricting entry into the area by all non-Lepcha, including those from Sikkim. That Sikkim's old laws be respected after its annexation was a precondition to its 1975 merger into the Indian Union, and the Indian Constitution was amended to provide this protection. Although the Lepcha are also found in other parts of India and in Nepal, around 86 percent of their 9000-strong population resides in Dzongu; the area is not only their spiritual homeland, but also their current one. Central to Dzongu, both physically and spiritually, is home to the mighty Teesta River, which originates in the Tso-Lhamo Lake at an altitude of 17,500 feet. It is on a tributary of the Teesta, in Dzongu, the PP have this hydroelectric project. The Lepcha look set to lose the most and gain the least from these projects. The likely beneficiaries in fact are the myriad companies, contractors, labourers, suppliers, bureaucrats, politicians and ministers involved – all of them concentrated in Gangtok and everywhere else but in Dzongu.

B. **Violation of Places of Worship Act** The Dzongu area was traditionally known as Myal Lyang in Lepcha or Beyul Demazong in Bhutia – the latter meaning 'land of sacred and secret treasures' and the former meaning, essentially, paradise. It was here that, according to legend, the Lepcha god created the first Lepcha man and woman from the sacred snow of the mighty Khangchendzonga (Kanchenjunga), the massif that the Bhutia and Lepcha revere to this day as a protective deity. Within the core area of the proposed Panan hydroelectric Project are a host of sacred sites: the Kagey Lha-Tso Lake, the Drag Shingye caves, the Jhe-Tsa-Tsu and Kong-Tsa-Tsu hot springs, which are said to be endowed with healing properties. Indeed, the entire northern district of Sikkim has numerous such 'treasures', each of which was blessed by Guru Rinpoche (Padmasambhava), the patron saint of Sikkim. Panan is one of the more disputed projects proposed for Dzongu – an area not only sacred but also falling dangerously close to the Khangchendzonga National Park, an area rich in flora and fauna. Given the physical, topographical nature of so many of Sikkim's holiest places – and the concurrent identification of the Lepcha and Bhutia with those sites – the potential impact of the current development proposals on Dzongu's religious identity and sanctity is what causes such great anxiety among many. In recent months, Sikkim's Buddhist community and clergy have become perhaps the most ardent forces in protesting the construction of the power projects. SIBLAC has forced the Government to abandon two hydropower projects viz. Lithang and Tingting over Rathong chu River on religious ground and another project viz. Tashiding Hydro Power Project over Rathong chu is under the examination of Sikkim High Court. Sikkim High Court has admitted the Writ by Sri Tenzing Bhutia and other challenging the legality of Tashiding Hydro Power Project on the ground of religion and environmental laws.

27. The developer takes advantage of a loophole in the CDM regulation that allows zero or negligible emissions to be claimed if the power density is over 10 W/m². Unfortunately, having a high power density does not, in fact, result in zero emissions. A high power density means that the area of the reservoir is small relative to the installed capacity. The smaller area means that emissions through the

reservoir surface will be smaller than in a large reservoir, but not zero. While page 9 of the PDD claims there will be negligible methane emissions, without actual measurements or comparisons to similar existing reservoirs, it is not possible to conclude that a reservoir will be carbon neutral. In particular, the PDD fails to mention that during the monsoon season, the amount of organic matter deposited into the reservoir, such as driftwood and leaves, will increase and thus provide additional sources of methane.

CONCLUSION Considering all this, we strongly and vehemently oppose CDM being considered to the Panang Project. No CDM credits should be granted to this project.

Endorsed by: **August 2012**

Tenzing Bhutia rumtekvillage@gmail.com
Sikkim Bhutia Lepcha Apex Committee (SIBLAC)[11]

Dawa Lepcha someray2000@yahoo.com, ACT, Sikkim

Himanshu Thakkar, Samantha Agarwal sa.sandrp@gmail.com
South Asian Network on Dams, Rivers and People www.sandrp.in, Delhi, India

Jitn Yumnam, jitnyumnam@yahoo.co.in
Citizens Concern for Dams and Development, Manipur (CCDD) AND
Centre for Research and Advocacy Manipur (CORAM), Manipur, India

[11] **SIBLAC is an apex level body representing Sikkim's indigenous Bhutia-Lepcha people of Sikkim. The SIBLAC is struggling for the survival of Bhutia-Lepcha people who have been marginalized in their own country of origin. There are quite a few reasons of marginalization and development of hydro-power projects is one of them.**

Appendix 1 List of fish available in Sikkim

Sl. No.	Scientific name	Local name
1	Acanthophthalmus pangia	Not known
2	Anguilla bengalensis	Rajabam
3	Bagarius bagarius	Gonch
4	Balitora brucei	Titay
5	Barilius bendelisis bendelisis	Khasray
6	Barilius bendelisis chedra	Chaley
7	Barilius vagra	Chirkay
8	Channa orientalis	Hilay
9	Clupisoma bhandari	Jalkapur
10	Crossocheilus latius latius	Lohori Buduna
11	Danio aequipinnatus	Bhitti
12	Danio naganensis	Bhitti
13	Euchiloglansis hodgarti	Lulay
14	Garra annandalei	Buduna
15	Garra gotyla	Nakkatua Buduna
16	Garra gotyla stenorhynchus	Buduna
17	Garra lamta	Buduna
18	Garra mcclellandi	Buduna
19	Garra mullya	Buduna
20	Glyptothorax basnetti	Dhodray
21	Glyptothorax bhutiai	Kanray
22	Glyptothorax conirostris	Kanray
23	Glyptothorax deyi	Kanray
24	Glyptothorax gracilis	Kanray
25	Glyptothorax sinense manipurensis	Kanray
26	Glyptothorax sinense sikkimensis	Kanray
27	Glyptothorax trilineatus	Kanray
28	Labeo dero	Gardi
29	Labeo pangusia	Theyr
30	Laguvia ribeiroi jorethanensis	Gona Machha
31	Laguvia riberoi riberoi	Gona Machha
32	Neolissocheilus hexagonolepis	Katley
33	Noemacheilus beavani	Gadela
34	Noemacheilus carletoni	Gadela
35	Noemacheilus corica	Gadela
36	Noemacheilus devdevi	Gadela
37	Noemacheilus kangjupkhulensis	Gadela
38	Noemacheilus multifasciatus	Gadela
39	Noemacheilus scaturigina	Gadela
40	Noemacheilus sikkimensis	Gadela
41	Noemacheilus spilopterus	Gadela
42	Pangasius pangasius	Not known
43	Pseudecheneis sulcatus	Kabrey
44	Salmo trutta fario	Kashmiri macha
45	Schizopyge progastus	Chuchay Asala
46	Schizothorax richardsonii	Dothey Asala
47	Semiplotus semiplotus	Chepti
48	Tor putitora	Mahseer

Source: Tamang, 1993