
Review of Existing Mechanisms for Tendering Hydro Concessions

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Terminology

BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
CMU	Cabinet of Ministers of Ukraine
DBOT	Design, Build, Operate and Transfer
EoI	Expression of Interest
HPP	Hydropower plant
LoI	Letter of Intent
MFE	Ministry of Fuel and Energy
MoU	Memorandum of Understanding
NAER	State Agency on Energy Efficiency and Energy Conservation of Ukraine
NERC	National Electricity Regulatory Commission of Ukraine
NGO	Non-Governmental Organization
PPA	Purchasing Power Agreement
PPP	Public-Private-Partnership
PSPP	Pumped storage hydropower plant
SHP	Small hydropower plant
RE	Renewable Energy
TOOR	Transfer of Operating Rights
USELF	
Oblenergo:	Regional Electricity Supply Company

1. HYDROPOWER POTENTIAL IN UKRAINE

1.1 PRESENT HYDROPOWER PLANTS IN UKRAINE

Presently, there are 6 large hydropower plants (HPP) and 1 pumped storage hydropower plant (PSHP) on the Dnipro river and 1 big HPP and 1 PSHP on Dnister river in Ukraine. these HPPs belong to OJSC "Ukrghidroenergo".

In addition, there are dozens of small hydropower plants (SHPs). In Ukraine terminology, SHP refers to power plants up to 10 MW in size, as only plants up to this size have access to the SHP "green" tariff (feed-in-tariff). In 2006, the total installed capacity of SHPs was equal to 107 MW; their generated electricity was in the range of 278-395 GWh/year (depending on metrological conditions). Most of the SHPs have to be reconstructed and renovated. Since the Green Tariff was introduced in 2009, the number of SHPs increased from 28 to 80 in August 2011.

1.2 ECONOMIC SMALL-SCALE HYDRO POTENTIAL REMAINING TO BE DEVELOPED

On the territory of Ukraine there are approximately 63,000 small rivers and water carriers with total length of 135,000 km. The economic potential of SHPs on these rivers is estimated at around 3.75 TWh), that is SHPs currently in use amount to less than 10 % of the hydro potential. If the whole economic potential of small hydro generation in Ukraine were used, it would replace 1.4 million toe/year.

According to Ukrainian Energy Strategy till 2030, the SHP potential in the country is estimated at 1140 MW of capacity with annual electricity yield 3,750 GWh/year.¹ The potential is composed of:

- Reconstruction and renewal of existing SHP with total capacity 135 MW (440 GWh/year);
- Construction of new SHP on river Tusa with total capacity 400 MW (1410 GWh/year);
- Construction of new SHP on river Dniester with total capacity 560 MW (1780 GWh/year);
- Construction of new decentralized SHP on small water carriers – with total capacity – 45 MW (120 GWh/year).

The greatest hydro potential has Zakarpats'ka, Lvivs'ka and Chernivets'ka regions, because of its mountainous nature with big amount of falls and possible flood. For those regions, the small hydro development is essential to provide regional ecological security as well as for the purpose of electricity generation. Regions with smaller technically attainable potential (200-300 GWh/year), such as Vinnuts'ka, Zytomurs'ka, Lygans'ka, Ternopils'ka and others regions may permit possible development of SHPs in the future. There are suitable regions for SHP in the Carpathians and Luhansk, Poltava, Vinnytsya, Cherkasy, Zhytomyr and Rivne oblasts.

The State Committee for Water Resources has information on all existing (including abandoned plants) and potential Greenfield sites.

Private developers estimate that some 10 projects in the 10-25 MW size could be found for hydropower development, and around 200 in the 1-10 MW size categories.

¹ In 2001 Institute of electrodynamics of National Science Academy of Ukraine together with State Committee on Energy Saving of Ukraine published Atlas of energy potential for renewable and non-conventional energy resources in Ukraine: energy of wind, solar, small rivers, biomass, geothermal and waste energy and energy of non-conventional fuel. According to this Atlas, total potential of small HPP of Ukraine is 12,501 GWh.

1.3 STATUS QUO FOR SHP ACTIVITIES IN UKRAINE

1.3.1 EXISTING SHPS – OWNERSHIP SITUATION AND OPERATIONAL STATUS

In the mid-1970s, during Soviet time Ukraine had close to 900 SHPs in operation with an average capacity of around 150 kW. However, high costs of operation, due to staff costs, led to the USSR government to close most of them for being inefficient. (In Western Europe this problems was solved by automization.) Now only 60-70 SHPs remain in operation and many of these are in need of refurbishment, a few have since year 2000 been renewed.

During Soviet times, the Ministry of Agrarian Policy used to be owner of around 600 of these. The Ministry had a small Village Electricity Department, which supervised the hydro activities, as investments in SHPs were part of the drive to electrify rural areas. But following the privatisation drive of the Ukrainian Government most of these assets were transferred into the hands of local authorities and the oblenergos (distribution companies). The Village Electricity Department was abolished. The Ministry of Agrarian Policy has now 72 plants on its books, out of which 55 are not operated. Most of the SHPs are owned by state enterprises operating under the Ministry.

Some SHPs are owned by individual companies, either private or state owned: OJSC "Ukrgidroenergo, Energochermet, Minenergo, Oblvodhoz, Minprombud; a nuclear power station operates a 11 MW SHP.

1.3.2 GOVERNMENT POLICY TO PROMOTE INVESTMENTS IN SHPS

The Ministry of Fuel and Energy (MFE) has since 2002 headed Government efforts to develop a coordinated approach to the development of Ukraine's hydropower potential. The CMU instructed the MFE and Ukrhydroenergo to prepare a draft law of Ukraine "On Amendments to Certain Law of Ukraine in respect of stimulation of development of small hydro energy" (the "Draft Hydroenergy Law"). The Draft Law, which provided for certain mechanisms for stimulation of development of SHP, was submitted to the Parliament of Ukraine on 9 February 2007. However, the President of Ukraine turned down the Draft Law on the grounds that it contradicted the Constitution and laws of Ukraine.

However, lobbying efforts from private developers succeeded in getting the Government to adopt a "green" tariff for SHPs up to 10 MW.

1.3.3 SHP PROJECT DEVELOPERS

Since around the year 2000, private developers have entered the field, purchasing or leasing existing or abandoned SHPs for refurbishment, as well as developing green-field SHPs. The biggest of these, presently under development is a 25 MW power plant in the Caspian Mountains, estimated to cost some 45-50 million euros in investment. The vast majority are SHPs smaller than 10 MW that makes them eligible to receive the "green" tariff.

The Ukrainian developer companies are few but quite active: The firm "Novosvit" has 25 SHPs in operation with a total capacity of 21 MW; and a further 3 plants with 1.6 – 1.7 MW under development. "Ecooptima" operates 14 SHPs with a total capacity of 20 MW. "Acuanova" is in 2011 involved in 25 projects, including six in operation. Much of the legislation passed in support of SHP-development, such as the green tariff for SHPs, was introduced as the result of lobbying efforts from these companies.

The typical approach of the Ukrainian developers – most of which are involved in businesses other than power generation also – is to engage in a joint venture with a foreign partner. Examples comprise companies in Italy and in Germany. The main objective of taking on a foreign investor as joint venture partner is technological know-how: good engineering expertise in developing hydropower projects, in particular for larger than 10 MW projects, is not available in the Ukraine. Whereas the foreign partner takes responsibility for developing

the principal design, Ukrainian engineers do sub-contracting work. The capital contribution from the foreign investor is of lower strategic interest to Ukrainian investors.

2. INTERNATIONAL EXPERIENCES WITH PERMIT REGIMES FOR SHP

2.1 THE PERMIT REGIME – BASIC CONCEPTS

Ukraine does not practice a concession regime for private investments in SHP, but a permit regime.

Permits are used for three purposes.

1. One is licensing: the authorization for a commercial entity to engage in a private business activity subject to special regulatory supervision by a dedicated public authority. A license is a permit, which sets the framework within which a private company uses its own assets; when defined criteria are met, a license is granted automatically. An example is the generation license issued by NERC to a company owning and operating a SHP.²
2. A second is to ensure compliance of proposed civil construction and business activity with land use regulations, environmental laws and building construction norms. For example, permits to ensure that regulations indicating a zone as residential area prevent an industrial plant to be set up there.
3. A third is a permit to use a 'public good': e.g. the water use permit or the permit allowing Local Council to lease land or other public property to a business entity.

The three types of permits are required for all SHPs irrespective of whether they are developed under a concession regime or a permit regime. The characteristic of a permit regime is that projects are initiated by private initiative: requests for access to public assets are 'unsolicited'; and that the physical SHP-assets being constructed at a hydro site are not transferred into public property at the end of the lease for the site.

The permit regime for SHP is driven by the philosophy (i) that SHP is a small scale entrepreneurial activity and that the task of public administration is to set the framework conditions for its execution; (ii) that hydro-resources are not essential state property; (iii) that private initiative will lead to a fast development of new SHPs; and (iv) that the absence of organised tenders reduces the costs of transactions for all parties, and for the public sector in particular.

The reasoning is that identification of SHP project sites can be left to the private sector since the permitting regime with its detailed conditions ensures compliance with public safeguards, including proper management of water resources. In all jurisdictions, the proper development and exploitation of this resource is regarded as a crucial public responsibility, all countries have, therefore, a detailed *permitting regime* for hydropower plants. Since the number of permits is identical for SHPs and for medium-to-large scale hydropower plants, the costs of transaction for the preparation and development of SHPs are high. In order not to deter investment, authorities try to identify areas where the conditions for obtaining a permit can be alleviated for SHPs without jeopardizing the attainment of the objectives targeted by the permit.

The review of international lessons learned will, therefore, start with the experiences of countries that practiced such a regime.

² The distinction is not clear-cut. In the UK, for example, OFGEM issues transmission licenses. Since this is a monopoly activity for the area where it is valid, it has strong concession characteristics. However, the transmission license does not give the Government any present or future ownership rights over the transmission assets of the license holder.

2.2 SRI LANKA'S PRELIMINARY PERMITS: THE SCRAMBLE FOR PROJECT RIGHTS

A permit regime faces the challenge of how to assign the rights to project sites to specific project developers? The identification of appropriate sites is subject to the carrying out of resource measurements by project developers. To do these, project developers need access to the sites to set up their measuring equipment and keep it there for an annual period or semi-annual period, a so-called *easement right*. Where land is privately owned, a developer can sign a contract with the owner giving him the right to perform a measurement program at the site. On public land, this right needs to be attained from the public authority administering the public ownership rights for the land. In addition, developers want to have some kind of assurance that the investments they do in resource assessments and initial studies are not done in vain: that they can develop the project if it turns out to be commercially viable.

In countries that allow private operators to identify and develop also major HPPs, the conventional procedure is for project developers to convince the pertinent authority to sign a memorandum of understanding (MoU) giving the project developer priority rights to develop the project. This, as Laos experienced, has the unfortunate effect of a proliferation of MoUs as developers scramble for project sites with the result, that the best resources are pre-empted by such MoUs. Fortunately, a MoU does not have the legal force of a contract. In Laos, the MOU is followed by the Project development agreement (PDA) and finally, by the Project concession agreement (PCA).

Sri Lanka implemented a small investor friendly system for the development of grid-connected RE-projects.

One pillar of the structure was the creation in 2007 of the Sustainable Energy Authority (SEA) as coordination and facilitation body, a sort of one-stop-shop for project developers. Within the SEA, the coordination function objective is reflected in the composition of SEA's Supervisory Board and in its RE-Projects Approving Committee: "all" stakeholders and approving bodies are represented on both.

A second pillar is technology specific feed-in-tariffs for RE-generation up to 10 MW; one is for SHPs.³

The third pillar is the permitting regime. The most important permits are – listed in chronological order for the project approval process – the *preliminary RE project permit* from SEA, the Letter of Intent LoI showing CEB *agreement to connect* the plant to its transmission line, the *land rights* through purchase or lease from the pertinent authority, *land use right from the District Land Officer*, *environmental clearance* in the form of an Environment Protection License (EPL) from Central Environmental Authority (CEA), permission to construct the project in accordance with the guidelines fixed in the EPL by the pertinent local authority, *project approval* by the local authority, the *RE project permit* from SEA, the purchasing power agreement (*PPA*) with the national power company CEB, the *generation license* from Public Utilities Commission of Sri Lanka (PUCSL). The preliminary RE-project permit provides the developer with the exclusive right to undertake resource measurements at a site and within a 1 and a half years period to submit a RE-project permit request for the particular site to SEA. The RE-permit is a RE-resource exploitation permit for a particular site. The concept for this is that the ownership rights to the exploitation of wind, wave and hydro resources belong to the state and that, therefore, a resource permit is required.

³ The formula for the calculation of the feed-in-tariffs seeks to pay investors prices as close to their true cost of supply as possible. An interesting feature is that developers have the choice between a fixed feed-in-tariff over 20 years or a step-wise declining tariff: a high tariff during the first 8 six years, a lower tariff for years 9-14 and a low tariff for years 15-20. The three-step tariff is to facilitate local financing of projects: commercial banks in Sri Lanka award loans with a tenure of up to six years only.

The feed-in-tariff regime showed its usual strength in attracting developers; the scramble for SHP-project sites was reflected in mass applications to SEA for preliminary RE-project permits. By December 2009, SEA had received 1,066 preliminary RE-project applications totalling 2,556 MW. 909 with a combined capacity of 1750 MW were *small hydro*, 62 with a total capacity of 439 MW were *wind farm* projects, and 55 were for *biomass based power projects* with a projected capacity of 329 MW. A single university professor submitted requests for more than 200 preliminary permits claiming to act on behalf of foreign investors who wished to aggregate several projects into single investments in order to reach their requires scale for investments. Other countries with similar 'let developers seek out the sites regimes', such as Thailand had similar experiences with individuals seeking to acquire the right to develop a project at a site; many with no intention of developing the site but for the purpose of selling off the right to acquired project sites to developers.

Nor did the 'one-stop-shop' structure function as intended. First, a shortage of personnel and the huge number of applications for preliminary project permits prevented SEA from performing its support function for developers. Developers could not turn to SEA for help in dealing with regulatory authorities that were slow in responding, or reversed earlier decisions, or took inflexible positions. The speculative surge in project applications also prevented the Executive Approval Committee for project applications to be an instrument for feed-back reports by involved stakeholders on the status of the processing of authorisations for projects that had received a preliminary permit from SEA: the monthly meetings had to focus on applications for permits. Secondly, whereas SEA can help in coordinating *central level* regulatory responses, SEA has little, if any, leverage when it comes to *local level* approvals of land leases, land purchases and land clearances. Obtaining these approvals can be something of a nightmare according to project developers.

In Peru, the authorities took the problems into account when they designed their temporary concession for the use of public property and the right to impose temporary rights of way in return for which the concessionaire is obliged to fulfill feasibility studies for generation and transmission. The temporary concession does not give exclusivity over the relevant area and can be granted to more than one petitioner (the same applies to the license for water use to conduct studies). A temporary concession can be granted for up to two years and can be renewed only once for two more consecutive years. The extension of temporary concessions are justified only on the grounds of force majeure, that is, that because of reasons beyond the control of the project developer, an extension is needed for the completion of studies.

2.3 TURKEY'S PERMIT SYSTEM: THE CUMULATIVE ENVIRONMENT IMPACT OF SHP

The Turkish Government has embarked on a comprehensive electricity reform program since 1996 to establish a competitive electricity market. The Electricity Market Law of 2001 finalised the break-up of the originally vertically-integrated state owned electricity monopoly (TEK) into the state owned distribution company (TEDAS), the Turkish Electricity Transmission Company (TEIAS), the Turkish Electricity Trading and Contracting Company (TETAS) and the Electricity Generating Company (EUAS). It also established the Electricity Market Regulatory Agency (EMRA), as an independent regulatory commission which provides generating licenses and sets tariffs. The law also laid the basis for the establishment of a wholesale electricity market and gradual opening of the retail electricity market.

Several approaches had been employed in the past to obtain private investment in generation: Build-Operate-Transfer (BOT), Build-Own-Operate (BOO), Auto-Producer (self-generation by industries who sell surplus energy to the national grid) and Transfer of Operating Rights (TOOR). The first three had been used to obtain private investment in new power plants; the TOOR model was used to transfer existing generating assets and distribution companies to private investors.

With the new private investment driven approach to new generation capacity, the promotion of hydropower became a natural policy objective. Turkey has the second largest hydropower potential of all European countries and the hydropower sector had an installed capacity of 13 GW in 2007. The economically feasible hydro electrical potential in Turkey is approximately 125,000 GWh/a, of which the economically feasible SHP potential is around 20,000 GWh/year.⁴ Only 3% of economically feasible SHP potential had been developed in 2002: 71 SHPs with an installed capacity of 177MW (673GWh) were in operation. In 2003, a regulation about Water Usage Agreement was launched, and the private sector was granted the permission to produce energy.

A comprehensive assistance package was put up to promote private investments of investments in SHP, defined as plants having a capacity of 0.5 to 25 MW. Key was the introduction of a feed-in-tariff by the May 2005 Renewable Energy Law: the price is 5–5.5 eurocent/kWh for 10 years from legal entities holding a renewable energy source certificate. But also facilitating administrative reforms and procedures were introduced: (i) A coordination forum was established for reform implementation across multiple agencies, including the Ministry of Energy and Natural Resources (MENR), Electricity Market Regulatory Authority (EMRA), Treasury, Privatization Agency, TEIAS, TETAS, EUAS and TEDAS. (ii) Project processing procedures were streamlined: for publishing project potential; receiving applications from private sponsors; reviewing the applications and feasibility studies; granting conditional and then final resource-use-rights after EMRA licensing. (iii) A clear definition of the term "generation facilities based on renewable resources" was incorporated in EMRA's Licensing Regulation, which clarifies the type of resources, as well as size limits on renewable generation plants that qualify for preferential and fast-track treatment. Policies include facilitation of developer access to land and adoption of transparent and streamlined procures for obtaining licenses and water-use rights. Hydroelectric power plants are divided into three categories according to their capacity for environmental impact assessment regulations: those below 0.5 MW, between 0.5 to 25 MW and above 25 MW. SHPs are plants which have a capacity of 0.5 to 25 MW and are subject to environmental impact assessment procedures specifically devised for this category of plants. Also in finance assistance was given: since initial high levels of collateral requirement from banks constrained small renewable developers with low collateral value from accessing finance, technical assistance was given to collaborating banks to accept the concept of project financing.

The private sector reacted quickly: by 2010, 903 SHP were under development. However, roughly 90% of these were at the stage of license application under evaluation. The low implementation rate was caused by bureaucratic setbacks and by public opposition to expropriation of the land and to the potential damage of the plant construction on the natural environment.⁵ As a result of lawsuits filed by the citizens and non-governmental organizations that observed damage on the environment, some plant constructions were stopped by court decision.

It turned out that the environmental impacts of unplanned, free market SHP-development had been underestimated in the procedures: the individual assessment of SHPs on a project by project basis failed to take into account effect the cumulative impacts resulting from consecutive construction. To get a SHP license, a company must sign a Water Usage Rights Act with General Directorate of State Hydraulic Works (DSI) and in the application to have an SHP license; the river basin plan prepared by DSI must be taken into account. Yet, the majority of the habitat deterioration problems stems from the improper planning and handling of the cumulative impacts. They are not accounted for on the basis of a river's

⁴ Source: Havva Balat: "renewable perspective for sustainable energy development in Turkey: The case of small hydropower plants", Renewable and Sustainable Energy Reviews, 2006

⁵ Source: S. Baskaya1*, E. Baskaya2 and A. Sari: The principal negative environmental impacts of small hydropower plants in Turkey, African Journal of Agricultural Research Vol. 6(14), pp. 3284-3290, 18 July, 2011

reservoir, nor are the plants constructed over the main river and its tributaries in such a way as to cause as little damage to the environment as possible. In almost all river basins, the hydroelectric plants are constructed immediately one after another starting nearly from the very source of the river to where it empties into the sea. Projects are so close to each other that only a 50 to 300 m obligatory tail water discharge distance is maintained.

An immediate lesson drawn by the authorities was to require environmental impact assessments for all SHPs. But in addition, the Government is in a reflection mode about further changes to the free regime.

2.4 LESSONS LEARNED

The combination of a feed-in-tariff for a SHP with a permit approach to site identification and project development has in all countries proven its dynamism in terms of attracting project developers and getting projects implemented.

The downside of the dynamism is that the public authorities become overwhelmed by permit applications with a short period of time, as investors scramble to get access rights to sites permitting a SHP plant to be installed. This pressure forces the authorities, inter alia in Sri Lanka, to outsource the processing of permit applications to outside consultants in order to process the individual applications within the timeframe considered to be reasonable by public administrative standards.

Because the public authorities save the costs of project identification, tender preparation and implementation, the approach is likely to have lower transaction costs for the public authorities. Compared to participation in a tender regime, project developers incur costs for project identification and resource measurements, but save costs for preparation of bids (including the cost of lost bids). Therefore, the permit approach is likely to have lower transaction costs overall. Yet, the savings are too limited to provide a strong economic justification for the permit system.

In the permit system, the a priori planning by public authorities for site identification is limited to land use planning and town planning. The experience of Turkey showed that environmental impact assessments performed on an individual project by project basis can lead to unexpected large cumulative impacts. Part of the problem in Turkey may stem from sub-standard quality environmental impact assessments (EIAs). But even better quality EIAs do not include analysis of cumulative impacts because it does not correspond to the existent practices.

3. UKRAINE'S PERMIT SYSTEM FOR SHP

3.1 LEGAL FRAMEWORK FOR PRIVATE INVESTMENT IN SHP

3.1.1 LAWS REGULATING CONCESSIONS AND PUBLIC-PRIVATE-PARTNERSHIPS

Ukrainian law does not apply the concept of water resources at hydro-sites being state property with the derived requirement that the right to the development of hydropower projects by private investors is subject to the award of a time-limited concession. Access to the development of greenfield projects on publicly owned land at potential hydropower sites is regulated by land laws, while the right to use the water for hydropower is regulated by water management and environmental regulation.

Private access to state or local government owned SHP-plants, on the other hand, is subject to the regulations under the *Law on Concessions* of 1999, which deals with physical public property. The Act provides an extensive list of the spheres in which objects of state and municipal property may be constructed, renovated and/or operated under a concession. The list includes also power generation and transmission. According to the Act:

- the Cabinet of Ministers of Ukraine (CMU) empowers a relevant public executive body to award concessions and enter into project agreements for an *object of state ownership*,
- whereas a local self-administration authority authorizes a relevant local self-administration body to conclude a concession contract for an object of *community ownership*.

The Act specifies "Special laws may set the specific features of exercising concession activities in certain spheres of economic activity".

The CMU has issued a model concession contract.

The lessor can be the State Property Fund of the Ukraine or local councils. The Law "*On Local Self-Government in Ukraine*" No. 80/97-BP of 1997, as amended, determines that territorial communities of villages, settlements and towns/cities, and districts in cities shall have communal ownership rights for land and natural resources and movable and real estate resources which are in communal ownership. It specifies general local self-government authority and in particular its authority in the concession field. The procedure applicable to municipal concessions is the general one provided in the Concession Law.

Although the Concession Law introduces the general rule that lease or transfer of public property is to be made via competitive bidding, it does not impose tendering as a condition: the Law's Article 2 on "Principles of concession activity" states that "choice of concessionaires is *mainly* on competitive basis". This enables private SHP-project developers to negotiate leases directly with local authorities.

In principle, a state or local authority could decide to tender the development of a greenfield project at a publicly owned site as a BOT-project; the same approach could be used for the refurbishment of an abandoned SHP-plant. The *Act on Public-Private-Partnerships* provides a general framework for this. The approach would de facto introduce a concession regime for the concerned SHPs.

However, by coincidence, not by conscious policy design, Ukraine applies a permit regime for private investments in SHP. Political friction prevented the implementation of the planned, coordinated approach to SHP-development, which was under preparation by the Ministry of Energy and Fuel in collaboration with other government agencies (section 1.3.2). The CMU authorized MFE and Ukrhydroenergo to facilitate the adoption of a draft law of Ukraine "On Amendments to Certain Law of Ukraine in respect of stimulation of development of small

hydroenergy” (the “Draft Hydroenergy Law”). The Draft was submitted to Verkhovna Rada of Ukraine on 9 February 2007. It provided for certain mechanisms to stimulate the development of SHPs. However, the Draft Law was turned down by the President of Ukraine on the grounds that it contradicted the Constitution and the laws of Ukraine.

3.1.2 LAWS AND REGULATIONS FOR LEASE OF PUBLIC LANDS

Since project development rights for SHPs are not awarded through tendered concessions, the most important laws for Greenfield investment are those that regulate access to public land and the economic terms for getting access to these.

The *Land Code of Ukraine* regulates how a land plot for placement of a new facility can be obtained. A number of implementing regulations define the land and town planning requirements for local Governments. Contrary to article 134 ‘Mandatory requirement to sell state- or communally owned land plots on competition,’⁶ the Land Code’s Article 124 ‘The procedure for leasing land plot’ imposes no competitive bidding for leases of land. It just states that ‘Land plots held in state or communal ownership shall be leased out on the basis of the decision of the respective executive power body or local self-government body through concluding lease agreement for the land plot.’ Under the law leases can be either short-term (no more than 5 years) or long term: no more than 50 years.

The Law “*On Land Lease*” permits anyone, Ukrainian or foreign legal entities and natural persons to lease land.

The Law “*On Land Valuation*” defines the principles of land valuation and regulates the land valuation procedures and activities.

The *Law on the State Budget of 2008*, article 82 introduced a new procedure for sale and lease of state and community owned land: starting January 2008 both are to be done through a land auction. CMU resolution 90 of February 2009 introduced the procedure for conducting land auctions. But conducting land auctions is a licensed activity and the requirements for the licensing of legal persons for the activity had not been established yet by April 2008.⁷

The CMU Resolution No. 284 of 1993 “*On Procedure of Determination and Reimbursement of Losses to Land Owners and Land Users*” defines the conditions and the procedure of compensation. The CMU Resolution No. 1279 of 1997 “*On Sizes and Procedure of Determination of Losses of Agricultural and Forestry Production Subject to Reimbursement*” sets the norms for determining the losses of agricultural and forestry production during the building of the constructions (communications, lines of electricity transmission etc).

The Law of Ukraine of 17 November 2009 No. 1559-VI “*On Transfer of Land Plots, Other Immovable Property Located thereon, which is Privately Owned for Social Needs or for Social Necessity*” enables local and state authorities to enforce access to privately owned land which is required for the building of approved infrastructure; e.g. for the transmission line connecting a SHP plant to the nearest distribution grid.

3.1.3 LAW ON PUBLIC PRIVATE PARTNERSHIP (PPP)

Already before 2009, areas PPPs had been concluded in Ukraine by national and local authorities in areas such as water supply, energy supply, housing and community amenities. Some local city councils had even adopted certain rules to regulate the relations with private investors. The PPP Act of 2009 regulates cooperation between the State and private partners, sets out procedures for preparation, execution and termination of PPP contracts, as well as it

⁶ Later adjustments introduced a change for allocation of land for public purposes. The purpose of competitive bidding was to get their highest possible price when selling public land. But for example schools could not pay high prices. Therefore a list of land exempted for competitive procedures was made, land for construction objects that are allocated without tender.

⁷ Source: IFLR, April 1, 2008

establishes guarantees for parties to these contracts. It allows Ukrainian and foreign business entities and individual entrepreneurs to act as a private partner in cooperation with the state and local governments. PPP contracts may be concluded in the form of concession, joint activity, product sharing and in other forms in different economic areas, including road construction and infrastructure engineering, water purification, tourism, electric power supply, health care, property management, etc. The law comprises a list of basic PPP principles among which are equality, non-discrimination, fair risk allocation.

In general, PPP involving state-owned property is subject to approval of the Cabinet of Ministers of Ukraine or a special governmental body to be established for purpose of managing and administering PPP projects by February 1, 2011. The local authorities decide in relation to municipal property.

3.2 INSTITUTIONAL FRAMEWORK IN SHP

The Alternative Energy Law authorizes the CMU to issue permits for carrying out activities in the sphere of the RES and to establish tariffs for electrical and thermal energy produced from the RES. However, pursuant to Article 17 (1) of the Electricity Law, the "green" tariff is established by the National Energy Regulation Commission (NERC).

The *MFE* is the central executive power body that ensures implementation of state policy in the energy sector. The MFE is authorized to take part in the development and ensure the implementation of state programs for the diversification of energy supply and to facilitate the increase in production of alternative fuels and production of electricity from renewable energy.

The MFE by its resolution No. 125-p "*On Implementation of the Plan of Measures aimed at stimulation and development of small hydro energy*" dated 21 September 2005 authorized the MFE, the State Joint Stock Company "Ukrhydroenergo", the National Joint Stock Company "Energy Company of Ukraine", "Ukrhydroproject" and oblast state administrations to develop a program for the development of small hydro energy in Ukraine and in oblasts. The result has been a list of projects of cascades and of rehabilitation of existing SHPs.

The *State Agency for Energy Efficiency (SAEE)* has the authority to confirm the alternative origin of fuel and to issue the Alternative Fuels Certificates.

SHP plays a minor role in Ukraine's present and future energy supply. Therefore, the ministry responsible for energy has not established a public agency to serve as 'one-stop-shop' for private investors wishing to develop a SHP-project.

In the absence of a one-stop-shop institution, the process for granting the required approvals to SHP developers is not coordinated formally between the involved public institutions. But the division of power and the responsibilities between different public authorities involved in the approval process are well-defined and proceed step-wise with the issue of one permit being dependent on the prior approval of another. Therefore, rule based coordination takes place in practice.

3.3 GETTING ACCESS TO LAND AND WATER RESOURCES

3.3.1 LAND LEASES

Land lease for energy objects and some other cases specified in the Land Code such as land for assets transferred under a concession, a lease, or a PPP is exempted from competition.⁸ The first applicant gains the land lease rights.

⁸ The full list of land allocations exempted from the competitive procedure is in the Article 134 of the Land Code.

In principle, the ownership of land along riverbanks cannot be in private hands, but developers can lease the land for up to 50 years. The size of the public land ranges from 50 meters along each side of the river to 250 meters, depending on the river. Banks along *state level water resources* are under the State Agency of Water Management of Ukraine or under the State Forestry Agency when forest land reaches the river. Finally, some land needed for a project may be private property and can be purchased.

Decision on public land along *local level water resources* are taken by local councils. The land lease agreement is concluded between the state/local municipality bodies authorized to manage state or municipality lands. If the land plot located within the borders of a residential settlement, it is *municipality* which enters the land lease agreement. If a land plot is located beyond the borders of a residential settlement, it is *local state administration*. After land lease agreement is terminated the land is held as a land reserve managed by the state administration/local council or is given to some other leaser.

A developer cannot commence the construction process before he has obtained the lease or ownership rights to the land plot designated for the project. Obtainment of a lease for lands of state or municipal property requires a decision from the relevant state or municipal authority, which resolves on the allocation of the land plot for the location of the facility according to the applicable Ukrainian law.

The land lease is not a concession as defined in this report: the concept of giving right to exploit resources for public benefit purposes. The concession regime involves more proactive initiative and planning from the state authorities than a permit regime (by definition that is passive, leaving it to private sector to identify the opportunities). Thus, for the purposes of this report, land leases are classified as "permits" not as "concessions".

The allocation of land for the construction of a SHP poses is ruled by specific regulations. The main laws regulating the process are the *Land Code of Ukraine* and the *Law about Lease of Land*. Yet, whereas the procedure for land allocation is transparent, it is by far the most complicated of all procedures encountered by a project developer and takes quite long: from one to three years to complete. The process involves the Village Management Local Authority, from which a permit for the intended use of land and its lease must be obtained, and the Oblast region authority.

A developer, who has identified a potential project site or investment object, can negotiate directly with the local parties. For projects located within a village/city, project developers talk to the city administration; for projects located outside city boundaries, they need to negotiate with the Governor and the Local District Administration. The application to a local council is based on a study made by a specialized organization that concludes that the place is good for hydropower. The study defines the amount of land necessary for construction. In addition, the developer must provide documentation for his company, certificates of establishment and registration.

There are no laws or regulations that stipulate that local authorities must publish an expressed interest in a project site by a developer in the national media in order to allow other parties to express their interest in the site as well. A public hearing process must be arranged according to regulations imposed by the *Law on Local Government* and the *Law on Local Town Development*; the latter includes the requirement for local Governments to prepare a general Master Plan for Town Development. The hearing concerns the project and its compatibility with local planning requirements and local impacts; not the right of access to the project site. Participants include the developer, state or municipal authority and interested persons such as individuals living near the site in question, owners and users of the neighboring land plots, representatives of public organizations acting on the territory. The hearing takes place twice. The first is an information meeting involving a presentation of intentions about what is to be constructed. Next the construction design, which has been evaluated by state expertise, is subject to the public hearings.

The land use plans by local Governments are subordinate to the directions given in Regional Territorial Action Plans prepared by the Oblast administration. If a greenfield SHP project is included in the Social and Economic Development Plan for a region, then local authorities are asked to take the relevant decisions at their local level to facilitate the implementation of projects listed in the plan. Inclusion in the Social and Economic Development Plan of a SHP project, therefore, presents an entry level opportunity for SHP-developers to get their projects approved at local level.

The economic terms associated with a land lease and other land access rights are fixed by administrative rules and regulations. The economic conditions comprise three items:

- The *annual land lease fee* is 3% of the value of the land. The value of land is estimated according to a methodology fixed by a CMU decree. For agricultural land, for example, it is the annual harvest multiplied by a price factor for the crop. The price for the land must be accepted by Local Council Decision. The decision is based on an evaluation performed by three authorized experts and is subject to a post-decision check by further external expertise that the price is correct according to Government regulations. Local Council sessions take place once every 2-3 months.
- The new *Law on Town Development Regulation* stipulates that projects must allocate some amount for local share participation by the local authority. The prescribed quantity is 4% for physical infrastructure investments and 10% of the cost of the project for legal companies. The regulation comes into force in 2013. But some project developers have already for their presently approved projects agree to give local authorities a 5% share. Presumably the share participation is on a so-called 'carried interest basis', meaning that no financial contribution from the local authority is involved. In order to take in a local authority as minority partner, developers must set up a new company for every new SHP they build. But a developer can, of course, set up an umbrella SHP-development company to hold the developer's shares in the individual companies.
- Compensation for rights of way (e.g. for the transmission line connecting the SHP to the nearest distribution grid) and required land expropriation. The calculations for these compensations are governed by strict rules and regulations.

3.3.2 WATER USE PERMIT AND WATER USE FEE

Gaining water use rights is not competitive. The first applicant gains the water usage right.

Whereas, a land use permit is required before construction can begin, the *water use permit* can first be obtained when the facility has been constructed. Although the *Water Code* allows a period of 25 years, present regulatory practice is for the permit to be given only for 3 years at a time.

Water permits, although provided for a certain period of time, similar to concessions, are not deemed to be concessions as the initiative is driven by the developer and the level of the payment for the water use right is not decided through the outcome of a competitive process. Furthermore, the process is not proactive on behalf of the relevant state authorities.

The division between local and state level responsibility repeats itself in the award of water usage rights. For state level water resources, the permit is awarded the Ministry of Environment and by the State Water Resources Committee (or Water Management Authority) at national state level. The regional offices of the two bodies - every Oblast has a water management company, which is responsible for regulating water use at local level - award the permit/authorization for local level water resources. The water management company gives its approval to the water use permit, the regional office of the Ministry of Environment then issues it. The permit records the exact name and location of the SHP, its capacity and estimated use of water.

The Water Code regulating the management and protection of water resources imposes on the CMU the adoption of regulations establishing fee rates for special use of water and a procedure of its collection. The CMU Resolution No. 836 of 1999 established the fee rate for the use of water passed through the turbines of electric power plants (except for pumped storage plants operating in the system with hydro power plants) in all rivers at 0.98 kop. per 100 m³. CMU regulations increase the royalty from year to year. 2011 the fee was 3.9 kopecs per 100/m³. All payments go to the state budget.

3.3.3 FINANCIAL CONTRIBUTION TO LOCAL COMMUNITIES

According to the law "On Town Building Activity Regulation" developers are obliged to make a financial contribution for the development of communities on whose territories they build objects. The contribution is used for the construction of infrastructure facilities and social purpose objects for the needs of the respective residential locality. The contribution, which was already established by the previous law "On Territories Development and Planning", cannot exceed 4% for the case of residential houses construction and 10% for the construction of other objects.

3.4 GETTING ACCESS TO THE POWER MARKET

3.4.1 GENERATION LICENSE

The wholesale electricity market (WEM) of Ukraine is currently based on the Single Buyer Model.⁹ According to the Electricity Law, all generators in Ukraine exceeding an installed capacity of 20 MW must sell their output in the WEM, while the generation facilities with installed capacity less than 20 MW still have a right to sell their electricity in the WEM. Selling generated energy on the WEM means selling it to the wholesale buyer/supplier, the State Enterprise Energomarket. For this, generators must (i) obtain a generation licence issued by NERC, (ii) sign the Wholesale Electricity Market Members' Agreement (the multi-party contract which specifies the rules of trades and settlement), and (iii) conclude an electricity purchase-sale agreement with Energomarket according to a template contract approved by NERC.

Thus, the first license a SHP needs to obtain from NERC is the *generation license*.¹⁰ It is easy to obtain. NERC has a list of needed documents, e.g. Articles of Association, documentation to prove that the company has enough funds to operate explore, people trained to operate, etc. NERC issue the generation license for 3 years at a time.¹¹ The license remains unchanged in case of renewal.

3.4.2 GREEN TARIFF APPROVAL

The Electricity Law gives generators with capacities below 20 MW the choice of selling their electricity outside the Single Buyer system:

⁹ The WEM Concept provides for the gradual liberalisation of the wholesale electricity market with the intention of creating a full-scale competitive market operating through a system of bilateral contracts between producers, suppliers and end consumers of electricity and a balancing market by 2014.

¹⁰ On 26 June 2009 the NERC approved amendments to the Generation License based on which the RES producers having or utilizing the equipment that produces electricity from renewable energy systems with capacity less than 10MW are exempted from licensing). However, if the renewable energy generator intends to sell the RES electricity to the WEM, he must obtain the Generation License and sign the wholesale electricity market members agreement.

¹¹ CMU decision 1305 of 1999 on 'Licensing Procedures of NERC (July 28, 2011 latest changes)' provides that the term of the license be defined by NERC, but is not to be shorter than 3 years.

- SHPs in the 10-20 MW size categories sell electricity in three ways: directly to non-regulated final consumers or to distribution companies at negotiated prices and contract conditions; or to Energomarket at a tariff established by NERC.¹²
- For *SHPs up to 10 MW*, Energomarket has the obligation to purchase, at the green tariffs, all electricity that is generated by the SHP and not sold elsewhere. The green tariff is fixed by CMU decision. For 2011, the green tariff for SHPs is 0.84 kopecs per kWh (=7.3 eurocents). Since this tariff is more favourable than the 'free market' tariffs, the green tariff is the option.

NERC approves the right of a SHP to the green tariff. The procedure for obtaining the green tariff approval is clear. It is defined in a decree of the CMU and NERC has standard format documents for the application. The approval is subject to documentation in the form of the Commissioning Certificate proving that the SHP has been constructed.

3.4.3 WHEELING AGREEMENT WITH OBLENERGO

In order to sell electricity under unregulated tariffs directly to customers in the region where a SHP is located, a SHP must sign a *wheeling agreement with the Oblenergo* operating the grid to which the SHP is connected. Once a SHP and a customer have agreed on the supply of power at unregulated prices, the SHP sends an application to the local regional electricity supply company (Oblenergo).

Sometimes Oblenergo gets an application from a supplier but sits on it. A copy of the application ought to be sent to NERC automatically, yet present procedures do not dictate that.

3.4.4 APPROVAL OF GRID CONNECTION

The Law of Ukraine on Amendments to Electricity Law No.1220-VI of 1 April 2009 (Green Tariff Law) states that the electricity suppliers who carry out the transmission of electricity by means of their own electricity networks: (i) may not refuse the RES producers access to such networks; (ii) should provide for the costs incurred by connecting the RES producers to their networks and (iii) the NERC should include such costs in full when approving the submitted investment programs.

After the land permit and then architectural permit –The SHP developer applies to the local oblenergo to obtain the technical conditions for connection of the RES plant to the electricity networks. The applicant includes an outline investment proposal, specifying the intended capacity, type of plant and one or more proposals for a location. The Scientific and Technical Board of the Oblenergo considers the outline proposal and decides on any limits or preferences, for example for the location of the connection.

The developer the commissions the project documentation for the connection i.e. the System Study, which determines the optimal way of connecting to the network as well as the necessary network reinforcements, as well as the feasibility study for the generating plant.

Developers experience problems in obtaining connections. This is mainly due to the restrictive implementation of network tariff methodologies, which does not allow, in practice, for the network companies to recoup the investments they would need to make for connecting RES-E producers.

Since developers of renewable energy projects wishing to construct connection assets themselves have the right to do so¹³, and the connection lines for SHPs often are no longer

¹² An example. According to the NERC Resolution from 30.12.2010 #1994 (with changes according to NERC Resolution from 23.06.2011 #1076) HPPs that are owned by OJSC "Ukrgridroenergo" have dual-rate tariff for Electric Energy supply: (i) an energy tariff of 0.031 UAH/kWh and a capacity payment ranging from 62,631-79,994 UAH/MW (without VAT). The level of the capacity payment is differentiated by yearly quarter; lowest in the first quarter and highest in the third. It should be noted that average wholesale tariff in July 2011 was near 150 UAH/MWh.

than 2 kilometers, many SHP developers chose to construct and finance the cost of construction themselves, hoping to be able to recouped the cost of investment from the oblenergo at a later stage, once it has money in its investment budget for it.

3.5 ENVIRONMENTAL APPROVAL AND TECHNICAL PERMITS FOR CONSTRUCTION AND OPERATION

A very comprehensive process, involving dozens of signatures, is required to get permission for the construction and the operation of a SHP. The process ensures that SHP projects comply with state standards and norms. It is expensive.¹⁴

The *environmental approval process* is prescribed very clearly by Government regulations. Licenses institutions perform the investigations. Yet, developers experience delays in required approvals from the district environment officers, as the regulations do not prescribe any time limits for responses to applications and to questions. Without approval from the officer, the lease cannot be granted.

The decision by the relevant state or municipal authority on the allocation of the land plot for the location of the project entitles the developer to commence the construction process. The local authority on architecture and construction must approve the architectural part of the design documentation after its' review by the architectural and city construction council.

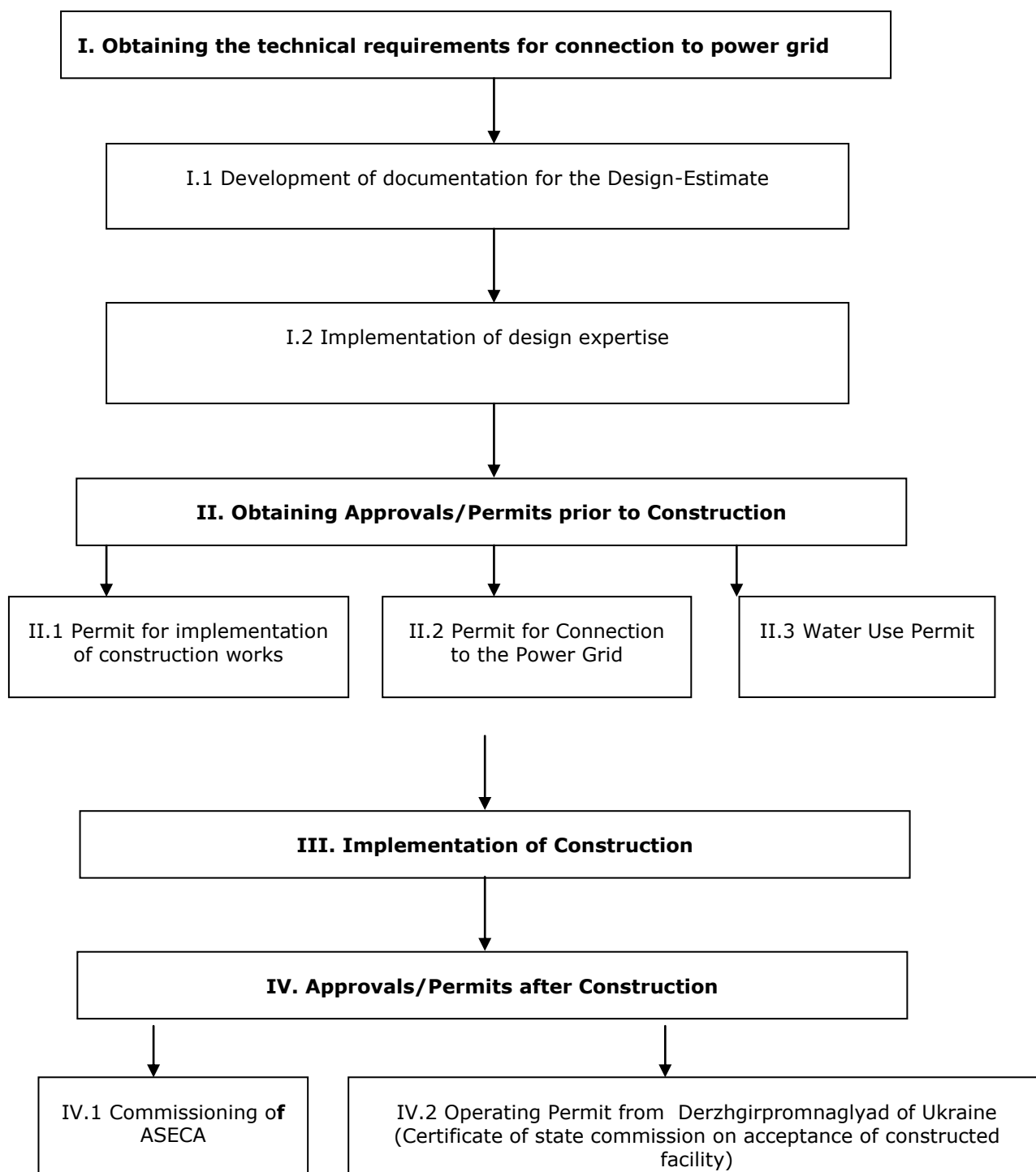
The approval process of construction includes:

- Obtaining a city-construction conditions and restrictions for the land plot development.
- Obtaining technical conditions for design development.
- Developing a construction design and obtaining approval from the local state authority on architecture and construction of its architectural part.
- Submitting design for comprehensive state construction examination. The construction design documentation must be developed by a licensed architectural organization by or with the participation of a qualified architect. In case the design does not comply with the issued technical conditions, the design must be approved by the entities having issued such technical conditions before its submission for comprehensives state construction examination;
- Obtaining a permit for construction works from the local construction authorities. Under the Planning and Development Law, the developer has the right to obtain the permit for preparatory works for the purposes of preparation of construction site for construction works before obtaining a permit for construction works;
- Obtaining the certificate of compliance for completed property. Upon completion of the construction and before commissioning of the completed object, the general designer with participation of the contractor should issue the *architectural and technical passport* of the object.
- The completed construction should be commissioned prior to the beginning of its actual operation. The compliance certificate issued by the Inspection certifies the commissioning of the object. The *compliance certificate* confirms compliance of the object with the design, construction standards and norms. The Inspection issues the compliance certificate within ten working days after the registration of the developer's application and submission of the following documentation.

¹³ They are expected to later transfer the assets to the network company under a procedure and financing rules which have yet to be developed.

¹⁴ Making maps is an expense of around USD100,000 per map. Even if only 1 hectare is needed for the project site as such, a map covering 40-50 hectare must be prepared as engineers must take into account many different things like where extra water comes for the '100 year flood'.

3.6 DESCRIPTION OF THE TECHNICAL APPROVAL PROCESS STEP BY STEP - CHART



The chart is a summary. Annex I provides details.

3.7 COMMENTS, OBSERVATIONS TO THE PERMIT REGIME IN UKRAINE

3.7.1 STRONG POINTS

The permit regime of Ukraine is in line with best international practice for permit systems: the procedures for allocation of land and water rights are transparent and well described, the public decisions are objective, and the permit process is complex but fair.

The critical issues to handle in permit regimes are: (i) how to you authorize access to a public asset in response to 'unsolicited proposals' and (ii) how in the absence of competition for access do you fix the economic terms for accessing and exploiting the public asset?

The right to access issue is handled by a very process intensive approval regime. It ensures that the proposed project is in compliance with technical standards and with local town development and land use plans.

The pricing challenge is addressed by setting prices for the lease of public land and property through fixed formulas rather than through valuation: no 'market price' value assessment is involved which can give rise to subjective interpretation and to manipulation. Specialized experts are involved in the calculation. Their involvement is to safeguard that the price is calculated in compliance with the published formulas.

The outcome of the process is fair. Firstly, because the economic terms for land and water access and for selling power to Energomarket are not subject to discretionary decision taking by public authorities. Secondly, because the green tariff, the primary economic parameter, is not high by international comparison: the year 2011 tariff of 7.6 eurocents is in line with published feed-in-tariffs in EU countries.

A further strong point is the 4% local ownership rule. International experience has shown that local opposition against renewable energy projects can quickly develop if the local population sees negative environmental impacts on the local habitat, while all economic advantages are seen to flow exclusively to external investors. Local co-ownership has proven to be a good instrument to reduce opposition from the local population.

Thus, overall, while not ideal, the rules and regulations protect both investors and the public sector from unfair treatment and abuse, at least in principle. By international standards for permit regimes, the regime in Ukraine can be said to represent best practice.

However, as we shall see in the section below, the public administration's implementation of the rules and regulations is a less positive story.

3.7.2 WEAK POINTS

Public share of economic outcomes from SHP

The public gets a return from the 'economic resource rent' in SHP from three sources: from the water usage fee, from the lease fee and from the developers financial contribution to local infrastructure development.

The developers succeed in getting leases valid for 50 years both when leasing a SHP-plant (the land on which a facility is located is subject to separate lease) as well as for land leases in the case of greenfield projects. At international level 50 years concessions/leases for hydropower projects are not unusual, but at the long end! The long period reduces the net present value of future public ownership to a very low level.

Some other countries apply the build-own-transfer (BOT) modality when tendering greenfield sites for the development of hydropower projects. The research done for this report did not look into the terms of the lease agreements for what is to happen with the SHP-assets at the end of the lease period. In principle, the options are the following: (i) the developer keeps the ownership rights to the SHP-assets when the lease of land ends. The SHP-owner has the right to bid for the renewal of the land lease. If a competing bidder wins the bid, the new

lessee will be required to reimburse the SHP-owner for the depreciated value of the assets.
(ii) The SHP is required to take down all assets and restore the land to its original condition.
(iii) The SHP is handed over to the lessor of the land in property.

Economic and technical optimization

Since there is no competition involved, the authorities are presented with a single design for the plant.

The project developer will propose a design, which is economically optimally for the developer. Depending on his alternative investment options the developer will choose a design, which maximizes either the rate of return on invested equity or the NPV of net revenue from the plant. The design options may involve trade-offs between maximizing the output from the plant or minimizing the cost of investment. The collective interest in the investment is likely to favor a design that maximizes annual achievable output from the site. The private interest will favor environmental investments that comply with the absolute minimum requirements rather than investments that generate the highest public benefit-cost ratio.

The detailed step-wise technical approvals verify compliance with technical norms and standards; they do not identify the optimal design from a public point of view.

Thus, whereas the procedure is certain to promote least cost development from the private investor's point of view, public least cost development will occur by coincidence, rather than by design.

Cost of transactions

Partly because of the absence of a competitive process to identify the best SHP design and the best economic terms for access from the public interest point of view and partly because of the absence of a priori public planning, the approval process is very process intensive and time consuming. The transaction costs for investors are high.

The more approval steps there are, the more institutions are involved, and the more detailed the procedures are (all with the best intentions of promoting transparency and objectivity), the higher are the chances that public staff in the approval process will take financial advantage of their decision taking powers.

Developers report that the procedure of land allocation is so complicated and process intensive that some investors lose heart. Double approvals by authorities at different levels of hierarchy may be said to be a consequence of the quality control in rule based permit regimes. Yet, for developers, they are a source of frustration. It would be more convenient the project developers – and more rational from a public administration efficiency point of view - if all procedures that can be done competently by a local authority are done by the local authority only: they are interested in promoting local construction, as it gives labor and develops infrastructure. Therefore, if they have capacity to assess proposals, they can be entrusted with the task. Developers experience when approval at a higher regional level is required, a single person can block it and not explain why a decision is refused. At higher level, upon receiving the papers, the officials have no idea about the project and what it is about, nor do they have any interest in it except as a means to get money for themselves out of it. However, if the senior official from an Oblast is interested in developing the Oblast, staff will get things going fast.

The Head of Environmental Service in the Region can refuse to sign off on the environmental approval of the application for a land lease and stop the process. The procedures dictate no time constraints on the staff with authority to sign nor on payment of compensation if they refuse to sign. A developer can spend much time on going to a region for signatures, and finding time and again that the pertinent person was not there.

Developers fail to see why it is necessary to present design documentation to a design institute in Kiev for assessment. It would be feasible to contract a licensed special design institute from the beginning, with all EIA etc and then present the local authority with the full set of documents prepared for evaluation there.

The water use permit is essential for a project, yet, it can be obtained only when the plant is constructed. Once more a double authorization procedure is involved: the oblast water management company and the regional environmental authority. Nor does it provide comfort that present regulatory practice issues the permit for water use only for 3 years at a time, whereas the Water Code allows a period of 25 years.

NERC can issue the right to the green tariff first when the facility is constructed. This gives problems for finance: banks are concerned that even when the regulations define a right, the developer cannot be sure of getting it.

The government of Ukraine recognizes that implementation of the permit system is subject to frictions. The CMU Decree no. 126 of February 2009 "On features of connection to the power grids of power energy facilities that produce power energy with use of alternative sources" seeks to assist the acceleration of land lots allocation for construction of HPP. It recommends to the organs of local self-government to carry out land lots allocation for construction of HPP facilities with the aim of providing connection to the power grids of HPP facilities in the shortest possible time.

Compatibility with principles for rational planning

The regime is out of synch with the trend towards a better planned development of local land use.

According to a recently approved Town Planning decree, every Village Authority must develop plans for the use of local water resources. The planning process will define prospective sites for the development of SHP-projects. The local authorities will choose sites with no negative impacts on recreation areas and no historical heritages, thereby clearing a number of issues that must be addressed in order for a developer to obtain all necessary permissions. The development of such plans would take no more than six months to one year. With the publication of these prospective sites, several investors may express interest in the same site. The logical process for the allocation of sites identified through a public planning process would be to tender the sites, or, as a minimum to publish applications for developing a site, allowing alternative investors to express their interest in the site within a specified time period. If further applications are received within the time period, a tender would be organized.

Similar to the situation in Turkey, the present project site by project site environmental impact assessment does not capture the *cumulative environmental impact* of several individual SHPs being developed along the same river. Presumably, the slow pace of development – due to a small number of local developers being active up to now – is the only reason why the issue has not yet emerged as a problem.

Compatibility with Legal principles for allocation of rights to public assets

The permit regime for SHPs is also out of synch with the basic legal premise in the Law on Concessions that sales and leases of public property are to be awarded through a competitive process. Article 2 on 'Principles of Concession Activity' states that the 'choice of concessionaires is mainly on competitive basis'.

The Land Code of Ukraine foresees obligatory sale of land lots of public or communal property or rights on them on competitive principles (land bidding).

Discrepancy between length of lease period and length of validity of water usage permit

Whereas developers all seem to obtain a 50 years lease period, the present regulatory practice is for the water usage permit to be given only for 3 years at a time. From a logical, legal point of view the lease and the water use permit should have the same length.

4. SHP CONCESSIONS: INTERNATIONAL EXPERIENCES AND EVOLVING BEST PRACTICE

4.1 THE CONCEPT OF A CONCESSION

A concession regime is characterised by the philosophy that a public asset is entrusted to a private investor on a temporary basis in order to achieve a public benefit through a public-private-partnership arrangement; in the end, the asset returns to public ownership.

The term concession is defined in identical wording in article 1 of *Ukraine Concession Law* adopted in 1999 and in article 406 of the *Commercial Code of Ukraine* dated 2003:

“The concession is the right granted by an authorized state body or a local authority for the purposes of public interest and under a concession contract, entered into on a paid and scheduled basis, to domestic or foreign economic entities (concessionaries) for creation (construction) and/or management (operation) of a concession object, provided the concessionary assumes the relevant obligations, liability and business risk.”

The important two words are ‘purposes of public interest’ and ‘contract’.

What is conceded may involve the transfer to the concessionaire of the right to use some existing infrastructure required to carry out a business (such as a water supply system in a city); or, the transfer of exclusive or non-exclusive easements: the right to use the real property of a public authority without possessing it (as in the case of hydropower plants getting access to a site and its water resources). The act of conceding is what distinguishes a concession from a *license*: a *license* authorizes a commercial entity to engage in a private business activity subject to special regulatory supervision by a dedicated public authority. A license is a permit, which sets the framework within which a private company uses its own assets; when defined criteria are met, a license is granted automatically. . An example is the generation license issued by NERC to a company owning and operating a SHP.¹⁵

The words ‘purposes of public interest’ and ‘*contract*’ indicate that a concession is a *public-private-partnership (PPP)*: the private investor gets monopoly access for the undertaking of an activity of public interest during a specified time period on terms specified in the concession while at the end of the term the ownership over all invested assets related to the activity is handed to the public authority issuing the concession.¹⁶

In most legal jurisdictions, private hydropower plants operate under a *concession regime* as a matter of principle. The premise - that hydropower resources belong to the state - goes back to Roman law under which the waterways were regarded as public property.¹⁷ This is also recognized in Ukraine’s Concession Law: Article 3 ‘Objects which can be given in concession’ includes under point 2 ‘water-supply, taking and cleaning of flow waters’ and ‘production and (or) transporting of electric power.

¹⁵ The distinction is not clear-cut. In the UK, for example, OFGEM issues transmission licenses. Since this is a monopoly activity for the area where it is valid, it has strong concession characteristics. However, the transmission license does not give the Government any present or future ownership rights over the transmission assets of the license holder.

¹⁶ The reverse does not hold. Most PPPs will have concession character – e.g. a tendered build-own-transfer (BOT) project for the construction and servicing of a new public library (e.g. the British Public Finance Initiative, PFI, scheme) but not be classified as a concession. It is just an alternative way of financing a public service/asset.

¹⁷ Under ancient Germanic law the waterways were regarded as private property, for the most part belonging to the farmers owning the riversides.

In all jurisdictions, the proper development and exploitation of this resource is regarded as a crucial public responsibility, all countries have, therefore, a detailed *permitting regime* for hydropower plants.

4.2 CONCESSIONS FOR SHP: KEY PRINCIPLES

4.2.1 COMPETITIVE TENDERS AS MEANS TO PROMOTE LEGAL FAIRNESS AND ECONOMIC OPTIMALITY

For reasons of legal fairness and economic optimality, concessions to private enterprises are awarded on the basis of a competitive process.

The *legal fairness* of competitive tenders for concessions relates to two facts. First, a properly organised and implemented tender allows all qualified, potentially interested private parties to get access to a public asset on equal footing. Secondly, the economic terms on which the private investor is given access to the public asset are determined in an open, transparent manner; this reduces the risk of corruptive practices defining who gets access and on which terms.

The superiority of the tender scheme in *generating economically superior outcomes* for the public is due to more effective competition and to superior planning. When there is effective competition among bidders¹⁸, competitive tendering leads to the assignment of licenses to the most productive suppliers whilst the process provides 'price discovery' of the true market price for the service or object: the price should be equal to the absolute minimum feed-in-tariff required to attract the asked for supply. (A politically fixed feed-in-tariff is based on an estimate of the commercial cost of supply.) The planning process for the preparation of the tender comprises the identification of suitable projects and analyzing the energy-environmental implication of these a priori. It facilitates coordination with induced investments in transmission and distribution grids and reduces the risk of unforeseen environmental consequences.

The economic efficiency argument is valid for tenders using the "price system" via an auction to allocate SHP concessions. When the tender is so-called "beauty contest", meaning that the award of the concession is based on a number of qualitative criteria without including quantitative price criteria, no price discovery is involved and the qualitative assessment may be too subjective.

Recourse to private sector based financing and operation of infrastructure projects is a relatively recent modality at international level: first in the 1990s it became widespread at international level. The experiences with permit and concessions regimes led to increased refinement and greater standardization of approaches to tendering and finance issues.

Consensus building on international best practice took a great step with the publication in 2001 by the "Legislative Guide to Privately-Financed Infrastructure Projects" prepared by the UNCITRAL (United Nations Trade Law Commission) Committee on Privately-Financed Infrastructure Projects. The Guide is intended to be used by national authorities and legislative bodies when preparing new concessions laws and concession agreements. It advises public authorities to use competitive selection procedures. In Europe, EBRD followed up on the guide with the publication of its own guidelines "EBRD Financing of Private Parties to Concessions" in 2001 and with the "EBRD Core Principles for a Modern Concessions Law" in 2005.

As a result of steady diffusion of best practices, both the quality and the worldwide use of the concession scheme progressed. Whereas tender regimes for RE-generation projects in the 1990s were a mixed success - tenders since 2008 for RE-power supply and for individual RE-projects have succeeded in bringing forward quality developers and low-cost feed-in-tariffs.

¹⁸ When there is only one bidder, or when there is collusion among bidders, the tender is unlikely to give the optimal outcome.

Examples include tenders in Brazil, Uruguay, Peru, India, China, Morocco for various RE-technologies and the tenders for SHP projects in Albania and Macedonia.

4.2.2 SUMMARY OF EBRD BEST PRACTICE PRINCIPLES FOR CONCESSIONS

The objective of EBRD's work is to promote: economy, efficiency, transparency and accountability in its partner countries. The EBRD, therefore, supports the principle that award of concessions by a public sector entity should follow a formal competitive tender process including (i) a formal initial notification of the opportunity to potentially interested firms, (ii) a pre-qualification process, and (iii) a structured approach to requesting and evaluating proposals.

EBRD's Procurement Policies and Rules, therefore, require that competitive tendering procedures acceptable to the Bank be followed to select a Concessionaire under a Concession Agreement. The Bank will finance Concessionaires only if it is reasonably assured that three "Core Criteria" are met:

- The process for selecting the Concessionaire has demonstrated sufficient fairness, transparency and competition;
- The process was free of corruption and in compliance with all applicable laws and regulations, and
- The terms of the Concession Agreement are reasonable in terms of price, quality and risk sharing when benchmarked against market practice.

Key elements, which make a competitive selection process acceptable to the EBRD, include: "(i) The Contracting Authority defined the investment opportunity and made it known broadly to attract the attention of potentially interested and qualified firms. Clear pre-qualification criteria are published and invitation to pre-selection proceedings is sent out. (ii) Appointment of an experienced team of advisers covering the technical, legal, and financial issues likely to arise in the tender, (iii) The process is open to public scrutiny and appropriate public administrative procedures. A clear request for proposals is issued with a clear statement on what is required of renderers. (iv) A structured approach to evaluation of the proposals and subsequent negotiation with the best-rated bidder is carried out. If more than one offer is received, the various offers are evaluated consistently against reasonable criteria, (v) the Contracting Authority publishes a public notice of the Concession award and discloses the key terms of the contract which has been negotiated."

4.3 BEST PRACTICE EXAMPLES

4.3.1 EXAMPLES FROM ALBANIA, MACEDONIA AND MONTENEGRO

This section presents best practice examples of the concession approach using competitive bidding to award SHP-development projects. The examples draw heavily on the experiences of Albania, Montenegro and Macedonia. These countries implemented their concession regime recently assisted by IFC as advisor¹⁹. They have state-of-the-art concession regimes as the design of their concession modality incorporates the most recent lessons learned from approaches in other countries.

The SHP program in Albania involves the development of 420 SHP (defined as less than 15 MW) sites throughout the country with a total potential capacity of 750 MW. Early 2011, the Ministry of Economy, Trade and Energy had awarded 50 concession contracts with a total capacity of 600 MW (including the capacity of medium sized plants).

¹⁹ In 2006, Albania's Ministry of Economy, Trade, and Energy hired IFC to create a legislative framework conducive to PPPs; help establish a PPP unit within the ministry; and identify, structure, and implement a pilot PPP transaction in the hydropower sector. IFC drafted a new concession law adopted in early 2007 and helped the Ministry of Economy, Trade, and Energy to establish a PPP unit. IFC identified an unfinished hydropower plant as the potential pilot.

The program of the Macedonian Government envisages construction of about 400 SHPPs with single electricity power up to 5 MW or with total power of about 250 MW. The expected annual production of electricity is about 1,200 GWh.

4.3.2 DBOT MODEL FOR TENDERING

All three countries apply the Design, Build, Operate and Transfer (DBOT) model in their concession tenders. In this, the concessionary activities are comprised of: design and planning, construction and the techno-economic use of water-energetic potential of water streams for production of electrical energy from small hydropower plants. Ownership of the entire hydro-energetic SHP facility with adjoining objects is transferred into the ownership of the Government in proper functioning state at the end of the concession period. Normally such arrangements are referred to as BOT; the addition of the D underlines that the design proposed by the bidders plays a role in the tender evaluation process.

The Albanian Government puts emphasis on the future property value of the physical assets by including in the concession contract the condition for required re-investment by the project owner. Based on assumed rates for depreciation and inflation, a minimum 40% of the total value of machineries and computers should be re-invested after 15-years.

The length of the concession period has significant economic importance in a BOT project. The private investor wants a long concession period in order to get revenue out of the investment for as long as possible. In principle, the state wants a short concession period in order to exploit the future property rights to the SHP-plant. But since a shorter concession gives the investor a shorter time period in which to amortize the financial investment in the plant, the consequence is a higher tariff for the power supply. Due to the impact on average power prices for final consumers, this is something the Government wants to avoid.

The tenders in Macedonia fixed the length of the concession period at 20 years. In Montenegro, although the Concession Act for Small Hydropower referred to a concession period of 30 years, the asked for length of the concession period became in the tender documents one of the point-giving parameters in the assessment of bids. It has no impact on the asked for tariff, as the SHPs get a feed-in-tariff.

4.3.3 LEGAL INSTRUMENT TO INTRODUCE CONCESSION REGIME FOR HYDROPOWER

Use of the BOT-approach is a logical consequence of the concession concept for hydropower: what is 'conceded' is the right during the concession period to exploit the hydro-resources at the project site for commercial purposes. At the end of the concession period the right to exploit the hydro-resources for electricity generation reverts to the public authority issuing the concession. If the SHP-assets remained in private ownership of the original concessionaire, it would complicate the tendering of a new concession for the site.

The three countries used different legal instruments to introduce tendered concessions for hydropower.

- In Albania, the Parliament adopted a new general Concession Law. A Cabinet decree the introduced the tenders for hydropower with reference to the Concession Law.
- In Macedonia, the tenders were conducted in accordance with the Concessions Act and the Water Act. Based on these Acts specific tender rules were developed for the SHPP programme.
- In Montenegro, the Ministry of Economy adopted, with reference to the general Law on Concession, the "Act for Concession Award to exploit Water Streams for Construction of Small Hydropower Plants In Montenegro". The Act²⁰ introduces the two-phased process for tendering, explains roles and responsibilities of bidders during the bidding process,

²⁰ Normally, the legal term "Act" is used for primary laws adopted by Parliament. The Montenegro "Act", very clearly is a secondary law, a regulation/decreed, adopted by a Ministry.

as well as requirements and obligations to be fulfilled by concessionary when conducting concessionary activities.

In all three countries, the legal acts were a follow-up on the prior development of a strategy for the development of small hydropower plants.

4.3.4 INSTITUTIONAL RESPONSIBILITY FOR ORGANIZING TENDERS FOR SHP CONCESSIONS

The recommendations of the UNCITRAL Legislative Guide stress the importance of identifying in the concession law the bodies/officials at various levels of government that are empowered to act as contracting authorities.

In Albania, a Cabinet of Ministers decision designated the *Ministry of Economy, Trade and Energy (METE)* as Contracting Authority for specified HPP concessions. METE identifies SHP concession projects for tendering, organizes the tender procedure, invites bids, negotiates and signs the concession contract with the winning bidder. The *Concessions Agency of Albania (ATRAKO)*, established in 2007 as a legal entity under the competence of the Minister of Economy, acts as the Government's PPP (public-private-partnership) specialist. It assists the promotion of concessions in a transparent manner and a fair and professional approach to concessions by the Contracting Authorities. ATRAKO advises the Contracting Authorities in the preparation, organization and implementation of tenders. The *transmission system operator OTSH* is the third entity with major direct responsibility for the organization of the concession tenders for hydropower projects.

Also in Macedonia, it is the *Ministry of Economy* which on behalf of the Government issues public calls for the granting of water concessions for SHP-projects. The ministry set up a *Commission* for preparing, organizing and conducting the procedure for water concession for electricity generation from 44 small hydro power plants (151 kW to 3.2 MW) on the river basins: Vardar, Strumica and Crn Drim.

Experienced consultants advise on technical, legal and financial issues throughout the selection process.

For a developer, it is an advantage that the authorities involved in the permitting process for a SHP project were involved also in the planning process for the preparation of the tender. The participation of the approving authorities commits them to speedy approvals once a concession has been awarded.

Qualified bidder, whose bid is evaluated and assessed as the most favorable, will be recommended to be selected as a concessionaire on the water stream in question by the Ministry of Economy.

4.3.5 IDENTIFICATION OF PROJECT SITES FOR TENDERING

All three countries organized their tenders by river: all project sites along a river are tendered. The concessions are for individual sites. But bidders may submit bids for any number of sites. The organization of a tender by river enables the authorities during the preparation process to subject the whole river project for a preliminary environmental assessment of project impacts. The water management authorities can analyze the total impact on water management, not the least on control of flooding. It allows a cascade coordination agreement to assure optimal operation of the entire cascade to be drafted. Tendering a multiple of projects, promotes maximum competition. It enables small project developers to participate, bidding on one site only, yet the potential to reach a critical investment volume by winning bids for several sites can also attract larger scale investors.

The preparation process starts with the selection of water streams. The identification of project sites on the stream is based on one year hydrologic measuring and research by the national Hydrometeorological institute at promising micro-locations. SHP-locations are chosen, where given water streams can be techno-economically used. Pre-feasibility studies

determine for each site the recommended installed capacity and calculate the potential annual production of electrical energy.

In line with best international practice, all three countries use the two-step process of a pre-qualification round and a tender round.

4.3.6 EVALUATION CRITERIA FOR PRE-QUALIFICATION

The organization of a pre-qualification round has two objectives. One is that only quality proposals are submitted for the follow-up tender. This reduces the risk that the concession is awarded to a bidder who later on fails to implement the project for financial or technical reasons. The other is to reduce the transaction costs for all participants in the tender process. The elimination of less professional bidders makes the tender process more predictable: international experience has shown that participation by less experienced developers leads to unrealistic financial proposals.

In accordance with the Law on Concessions in each of the three countries, the Bidders should meet the general conditions of qualification for participation. In addition, there are specific criteria relating to the financial strength, technical and professional capacity of the bidders. The table below shows the prequalification criteria used by the Government of Montenegro in its SHP-tenders. Status of the qualified bidder is granted to bidders who receive 85 or more points in the prequalification phase.

Figure 1 - Prequalification criteria for evaluation of applications, Montenegro.

Ref.	Criteria/Sub-Criteria	Points
P.1.	Technical capacity	0-45
P.1.1.	Experience in the design and planning and construction of SHPP	0-15
P.1.2.	Experience in the management of SHPP	0-5
P.1.3.	Capacity of constructed hydro-energy facilities	0-15
P.1.4.	Capacity of managed hydro-energy facilities	0-10
P.2.	Financial capacity	0-30
P.3.	Participation on Montenegrin market	0-25
P.3.1.	Positive business operations of the firm registered in Montenegro	0-15
P.3.2.	Experience in construction of complex objects and design and planning of hydropower plant in Montenegro	0-10

Deadline for bid submission in the qualification phase was 90 days.

4.3.7 EVALUATION CRITERIA FOR PICKING WINNERS IN TENDERS

The tender documentation contains hydrological, geological and topographical data and data which refer to the land ownership, as well as conditions which should be fulfilled by the concessionaire.

The objective of the tender is to identify and select the bid that presents the optimal economic conditions for the public. Basically, the economic value for the public of a proposed project is a package composed of three items: the financial terms offered to the lessor, the contribution to national power supply in terms of generating capacity and annual power generation, and the environmental impact of the proposed design. Bidders are, therefore,

required to submit in the qualification phase the preliminary/conceptual design on optimal techno-economic use of the water stream, fully taking into consideration spatial and environmental limitations. The DBOT terminology reflects this.

The weight to be given to the price, energy policy and environmental policy criteria depends on political preference. Since different countries, have different political preferences, the relative weight given to each criterion differs by country. This is illustrated in the following two tables that show the points per criterion used in the SHP tenders in Albania and in Montenegro respectively. In Albania, the highest importance was attached to the power supply; in Montenegro the concession fee had highest rating.

Figure 2 - Criteria for evaluating bids for SHP concession tender in Albania

No.	Criteria – Albania Tender for SHP Concessions	Points
1.	Electricity production for multi-year average discharge (kWh)	25 points
2.	Power installed capacity for multi-year average discharge (kWh)	10 points
3.	Time for construction and commissioning of HPPs (month)	15 points
4.	Value of investment (Lek)	10 points
5.	Costs of machineries and electrical equipment per kW installed capacity (Lek/kW)	10 points
6.	Value of "concession fee" (expressed in % of annual electricity generation)	10 points
7.	Value of re-investment (%)	10 points

Figure 3 - Criteria for evaluation of bids in the qualification phase, Montenegro

Ref.	Criteria/Sub-Criteria	Points
K.1.	Amount of the concession fee	0-45
K.2.	Duration of the concession	0-20
K.3.	Technical parameters from the Preliminary/conceptual design	0-20
K.3.1.	Annual produced energy on the pragu of SHPP	0-15
K.3.2.	Installed capacity of SHPP	0-5
K.4.	Multifunctional solutions	0-10
K-5	Accessibility of the land for the purpose of conducting concessionary activities	0-5

In all three countries the feed-in-tariff for SHPs was fixed by law – in Montenegro it amounted to 7.93 c€/kWh throughout the concession period. The financial offer by the bidders, therefore concerned the level of the concession fee. In Albania and Montenegro, the bidders were asked to express their offer in terms of GWh per year; multiplied by the prevailing tariff this provided the resulting concession fee in monetary terms. The minimum fixed in the tender documents was 2% of expected average annual generation. Macedonia was the only

country to divide the concession fee into two components: an annual fee fixed at 2% of sales revenue and an upfront concession payment offered by the concessionaire in its bid and expressed as a fee per kW of capacity offered to be constructed by the bidder. Montenegro was the only country to make the length of the concession period – a priori fixed at a maximum of 30 years in the tender documents – a criterion. Albania was the only country to include an obligatory reinvestment in year 15 in the concession conditions.

The Concession Agreement is executed in three phases: development of technical documentation phase of about one year during which all necessary permits are to be obtained, the construction phase of about two years, and the techno-economic exploitation phase of up to 30 years.

4.3.8 OUTCOME OF TENDERS

Macedonian separated the 400 potential sites for SHPs into a series of packages, which were tendered sequentially: Tender 1, launched on 14 February 2007, for 60 SHPP sites; Tender 2, launched on 10 September 2007, for 28 SHPP sites; Tender 3, launched on 16 December 2008, for 20 SHPP sites; and Tender 4, launched on 15 February 2010, for 36 SHPP sites.

A total of 30 Macedonian, regional and Western European bidders submitted 181 compliant bids for 71 of the 108 sites tendered in the first three rounds. The number of bids per site ranged from one to six, with the average being 2.5 and 16 sites receiving only one bid. The largest site awarded to date is 2.7 MW and the average is less than 1 MW, with investment costs of approximately EUR 6 million and EUR 2.5 million respectively.

5. INTRODUCING A CONCESSION REGIME FOR SHP IN UKRAINE

5.1 MOTIVATION FOR THE RECOMMENDATION

5.1.1 ECONOMIC ADVANTAGES

Under a concession regime, the right to exploit the water resource is a privilege; the maximization of public benefits and economic returns from it is a key objective of the regime. Under a permit regime, lease of land for hydropower is a commercial transaction, which is not different from the lease of land for the construction of a building or for farming.

In order to maximize the economic benefits for the Ukrainian public, a scheme for private investment in SHPs must cover three objectives: (i) promote the realization of the full economic potential for SHP, (ii) minimize the negative environmental impacts from SHPs, and (iii) minimize the economic rent that accrues to private investors.

The review in this report of the permit regime in Ukraine reveals that it is in line with international best practice for permit regimes. Yet, a permit regime is not best practice: a concession regime provides superior outcomes for the public and provides a more predictable regulatory framework for investors:

- From the *public point of view*, a concession regime provides four advantages over a permit regime. (i) On average, competitive bidding for access leads to a higher concession/lease fee than a bilaterally negotiated deal. (ii) Competitive bidding offers the public a choice between alternative plant designs; in a bilateral negotiation, the developer presents a single design. (iii) Tendering concessions on a per river basis allows a priori assessment of the cumulative environmental impact of the SHPs.
- The advantage for the *average developer* (very well-connected developers lose out) is that the concession regime provides more transparent access to hydro-resources and makes the permit process faster - once the concession has been awarded!

5.1.2 COMPLIANCE WITH LEGAL AND REGULATORY TRENDS IN UKRAINE

Present legislation in the Ukraine is several steps away from the introduction of a concession regime for hydropower. Uses of land, water and assets are regulated by separate laws and sublaws. Natural resources are not subject to concession. Lease for energy objects is exempted from competition, the first applicant gains the land lease rights. Gaining water use rights is not competitive, the first applicant gains the right to use water at a particular place.

However, the present permit system for the award of SHP-projects is an improvised, not a consciously chosen solution, and most legal-regulatory-institutional elements for the introduction of a concession regime are already in place.

The *Concession Law's* Article 2. on "Principles of concession activity" states that "choice of concessionaires is mainly on competitive basis". Whereas the concession law is intended to regulate the transfer of physical property, rather than of rights to natural resources, it is by nature non-exclusive: the list of relevant property can be expanded by law. The law, thus, applies directly to publicly owned existing SHPs, whether in operation or not; and its principles can be applied in secondary legislation, which introduces concessions for hydropower.

The *Act for the Physical Protection of the Population* makes it mandatory to operate hydropower plants as protected facilities in areas of the Ukraine, where flooding is a major problem (found mainly in the Western parts of Ukraine). For some river basins integrated,

all-encompassing water management plans have been developed; e.g. the plan for the Tysa River prepared by the Water Resource institute.

The recent *Decree for Local Land Use Planning* makes it mandatory for every Local Authority to develop plans for the use of local water resources. This includes defining the prospective sites for the development of SHP that fulfill the requirements for obtaining all necessary permissions: e.g. that the site is not a recreation area, that there no historical heritages blocking development, etc. It is expected that the development of such plans will take six months to one year.

The MEF, inter alia for the preparation of the failed draft *Hydroenergy Law* of 2007, has good experience with coordinating the analytical and planning efforts of public stakeholders that are relevant for SHP.

5.1.3 IMPROVED ACCESS TO INTERNATIONAL SOURCES OF FINANCE

The procurement rules of international development banks, e.g. of EBRD, prescribe public tendering of public assets and projects leased or purchased by private investors as a pre-eligibility condition for receiving project finance from the EBRD. Derogation from this principle is difficult to obtain from the Boards of the development banks that approve the finance. Project rights awarded by competitive tender make it more likely for projects to obtain finance.

5.1.4 ALIGNING THE LENGTH OF LEASE PERIOD AND LENGTH OF VALIDITY OF WATER USAGE PERMIT

From a logical, legal point of view the land lease period (present practice 50 years) and the validity of the water use permit (present practice 3 years) should have the same length. The Water Code allows a permit period of 25 years. It is recommended for new hydropower plants and for the lease of SHPs in public property to expand the water permit period for 25 years and to reduce the length of the lease period to 25 years; both counted from the day of the operating permit for the plant.

5.1.5 ALIGNMENT WITH INVESTMENTS IN GRID EXPANSION AND UPGRADING

RE-deployment policies worldwide face the challenge of the mismatch between the location of the best RE-resource sites and the configuration of the national transmission and distribution grids. In the Ukraine, the challenge of optimal grid expansion and upgrading is accentuated by a severe lack of finance for investments. Planned concessions for SHPs and MHPs will, on the side of hydropower, facilitate pro-active planning in complementary investments in the affected distribution and transmission grids.

5.2 RECOMMENDED SCHEME

5.2.1 TENDER BY RIVER BASIN

To promote an integrated water management approach, tenders for greenfield SHP-projects are organized preferably on a water basin basis. It allows to include individual projects in the tender based on an assessment of the environmental and flood control impacts of the selected projects as a whole.

In line with the identification of Ukraine's SHP potential in the Ukrainian Energy Strategy till 2030, it is recommended to organise four SHP tenders in successive order. A bidder participating in a tender can chose to bid for any number of projects, but when several are won, each will be a separate concession. The order below is arbitrary, not a recommendation:

1. Construction of new SHP on river Tysa, and rehabilitation of abandoned SHs on it
2. Construction of new SHP on river Dniester, and rehabilitation of abandoned SHs on it
3. Lease of SHPs and rehabilitation of abandoned SHs located on other rivers
4. Construction of new decentralized SHP on small water carriers

Tenders for projects larger than 10 MW will be organised on an individual basis.

Some SHP-projects in the four tenders will not attract a bid. For these, the Government has two follow-up options. One is to organise a new tender for those projects a few years later. The other is to accept non-solicited bids for any of these projects a few years after the tender. A developer's expression of interest (EoI) in a project must be publicised by the public owner. This will allow other interested parties to express their interest in the project within a three months period. In case other EOIs are received, a tender will be held; otherwise the terms for the lease/concession will be negotiated between the developer and the public owner.

Where there is a need for it, *cascade management contracts* for coordinated exploitation of water resources can be included in the concession document.

5.2.2 DBOT-TENDERS FOR SHP-PROJECTS LARGER THAN 0.5 MW

It is recommended that the tenders for the lease of state owned and local government owned SHPs and of land at greenfield SHP project sites of *SHP projects larger than 0.5 MW* are implemented as DBOT projects. The DBOT-modality maximizes the financial benefits for public owners of the SHP-projects and provides a 'clean table' at the end of the lease/concession period since both the physical assets and the land and water resource assets return into public hands. A new tender can then be organized for a new concession - the lease rights - to the project assets, land and water resources.

5.2.3 OPTION FOR PUBLIC OWNERS TO SELL EXISTING SHPS SMALLER THAN 0.5 MW TO PRIVATE

For *SHP-projects below 0.5 MW* the BOT-concession modality may be considered excessive by the public owner. It is recommended to permit the sale to private investors of publicly owned SHP-assets up to 0.5 MW through competitive tender and subject to approved inclusion in the SHP-development plan for the basin.

5.2.4 INSTITUTIONAL RESPONSIBILITY FOR THE ORGANIZATION OF SHP-PROJECT TENDERS

The organization of the tender requires the integration of the two dimensions of Ukrainian planning: the *sectorial plan* for the development of hydropower resources and the *territorial action plans*: the Regional Social and Economic Development Plans for the regions along the river basin and the Local Authority plans for the use of local water resources, which include the identification of hydropower sites and their inclusion on the local land use plans. Finally, the *grid expansion and upgrading plans* of the privately owned *Oblenergos*, must take into account the need to connect the SHPs included in the Regional Social and Economic Development Plan.

The institutional responsibility is summarized in the chart below. In the chart, the MEF, for having the political responsibility for the development of renewable energy resources is designated as lead institution. But it can equally well be argued that the State Water Management Agency, having the responsibility for the proper exploitation of the country's water resources would be the most appropriate institution for leading the process.

Implementation of Concession Regime for SHP



For each tender round, the MEF will set up a Commission to prepare and organize the tender. The Commission would include representative from all involved permit-issuing authorities: the State Agency for Water Resource Management, the Ministry of Environment, the state and local authorities owning the SHPs and or the Greenfield land to be leased, Ministry of Agricultural Policy and Food, National Committee of Forestry, the regional governments (preparing the Social and Economic Development plans), the Oblenergos (for integrating the expected connections in their investment plans). The tender will publicize all projects, qualified bidders can bid for any number of projects. Since different SHP and landowners are involved, each project will be a separate concession.

The Commissions will contract local institutes and consultants to prepare the pre-feasibility studies for the SHP-plants, the water management plan and the cumulative environmental impact assessment.

A team of Transaction Advisors with solid international experience in SHP-tendering would assist the four Commissions as process consultants; preparing the tender documents and advising until negotiations with a winning bidder have been concluded. The advisors would be financed by a donor organization, preferably the EBRD.

5.2.5 TENDER MODEL

It is recommended to apply the tender model described in section 4.3, the main features of which are: (i) two stage selection process with the initial pre-qualification round followed by qualification round, (ii) DBOT modality using a combination of price (concession fee expressed in annual GWh multiplied by prevailing tariff) and quality criteria for picking the best bid and (iii) limiting the concession period to a maximum of 30 years.

The DBOT modality is recommended in order to maximize public revenue from the exploitation of SHPs: the public gets money during the operation, and once more at the end of the lease from the asset value of the CHP.

Evaluation criteria for pre-qualification and for the assessment of bids can be defined by MEF in consultation with Ministry of Economics and the State Property Agency. The examples

listed in section 4.3 provide a good starting point. The evaluation criteria for the selection of the winning bid must include a hard financial offer; otherwise the risk of arbitrariness is too high.

For SHP-projects, the key evaluation criterion would be the offered concession fee payment to accrue to the local Government - municipality and region in a proportion to be determined: e.g. 65% municipal and 35% regional government for tenders, where the land lease is with a municipality and the reverse proportion when the land lease is with a regional authority. It is recommended that the point system also includes size of capacity and annual generation as well as plant design features. The concession fee would eliminate the obligation imposed by the "On Town Building Activity Regulation" for a financial contribution that the developers must make for development of communities on whose territories they build their objects.

For *hydropower plants larger than 10 MW*, i.e., plants that are not eligible for the green feed-in-tariff, the project should be awarded to the bid offering the *lowest price for generated energy*.

5.2.6 STATE COMPANY OWNERSHIP OF SHPS

In cases where the MEF or the Ministry of Agriculture own a controlling stake in a corporatized enterprise owning a SHP plant in need of rehabilitation/upgrading investment, they are to initiate a Board meeting for taking the decision to order management to either undertake the investment or to divest their SHP-plants through public tender. In principle, this can be done without a formal CMU decision on this, by agreement between the two ministries.

5.3 GAP ANALYSIS

5.3.1 ASSESSMENT OF THE INSTITUTIONAL CAPACITY TO IMPLEMENT CONCESSION REGIME

There is a lot of experience in Ukraine with land use and productive planning and a lot of institutions capable of providing qualified inputs to the concession preparation process.

There is no previous experience in Ukraine with the organization of river-basin based tenders for SHP projects. For this reason, recruitment of a team of transaction advisors with previous experience in the organization of such tenders is essential for the successful implementation of a concession regime.

Few if any Government staff is qualified to identify what SHP-project is viable, what it would cost, what design it would need. National technical expertise for design of plants exists. But project developers take on board foreign partners to provide added design expertise.

A number of manufacturers produce equipment needed for SHPs: e.g. turbines by OJSC "Turboatom", generators by SEP "Electrotyazhmash", transformers by PJSC "Zaporozhtransformator".

Among construction companies that build HPP one can mention Consortium "NVO Ukrhydroenergobud" created in 2005 to consolidate engineering and technical potential of design, installation and maintenance organizations for construction and reconstruction of hydroelectric and other hydraulic structures.

5.3.2 PUBLIC COSTS OF IMPLEMENTATION AND SOURCES OF FINANCE

The implementation of a concession scheme for SHPs will impose the following expenses on the public budget:

- Cost for legal experts to prepare required primary and secondary legislation.
- Costs for hydropower specialists to prepare pre-feasibility studies for each site: (i) calculating likely capacity and annual power output, (ii) providing a first sketch of project layout (for

existing SHPs, the scope of required rehabilitation) and (iii) making a preliminary assessment of project costs. It is likely that most of this information has been collected already by MEF.

- Cost of consultants to prepare preliminary environmental impact assessment of water basin impacts of the envisaged projects per basin. Holistic water management plans exist already for some basins.
- The cost of Commission meetings
- The cost of foreign transaction advisors, including the preparation of tender documents

The consultant TORs do not ask for an estimate of the above costs; nor how these are to be financed. Some costs must be born by the central Government budget. But donors may be found to finance some costs, e.g. the cost of foreign consultants. Logical partners to contact would be the EU Commission and the EBRD. But bilateral donors may also be interested.

5.3.3 LEGAL, REGULATORY AND POLICY GAPS

The introduction of a concession regime for private investments in SHPs requires a number of legislative and regulatory initiatives. These are summarized in the table below.

Figure 4 - Gap analysis for Ukrainian case

GAP	RECOMMENDED ADJUSTMENT	RESPONSIBLE AUTHORITY
National policy for SHP-development	New version of Draft SHP-Law	MEF to draft text Accept by CMU, then to Parliament for adoption
Mandatory tenders/auctions for lease or transfer into private ownership of publicly owned SHPs and land at SHP sites	Adjustment to Law of Concessions, closing loophole of article 2, allowing transfer without tender or CMU decree specifically for SHPs Or Concession law for Hydropower	Ministry of Economy (ME) + State Property Fund to draft text, reacting to proposal made by MEF. Accept by CMU, then to Parliament for adoption
DBOT concept for tendering SHPs larger than 1 MW	CMU decree with reference to Act on Public-Private-Partnerships	ME + State Property Fund to draft text, reacting to proposal made by MEF
Private ownership of SHPs smaller than 0.5 MW	CMU decision providing authorization for sales of SHPs smaller than 0.5 MW to private investors and for Greenfield projects up to 0.5 MW	ME + State Property Fund to draft decision text, reacting to proposal made by MEF
Water basin based SHP development plans	Setting up Commission per relevant water basin with responsibility to prepare development plan and implement tender for the SHP-projects	MEF
Coordinated cascade operation of SHPs	Cascade contract as obligatory document for relevant BOT-projects	Water Resource institute assisted by EBRD consultants
Concession fee as financial criterion in bid evaluation	CMU (ME) Decree replacing present 4% local ownership share by concession fee	ME to draft decision text, reacting to proposal made by MEF

A concession regime for SHPs can be introduced de jure or de facto.

The de jure, i.e. formal, introduction through the adoption of a Hydropower Concession Act provides maximum legal clarity and can be introduced with reference to the Concession Law, Land Law and Water Management Law. The Act would introduce the regulatory instrument of 25 years concessions for SHPs that combines the right to the land lease and water usage right in one package and subject to a concession fee. The subsequent conclusion of the land lease and water usages rights would be in accordance with the land use and water use laws. In addition to this law, adjustments in the form of a single new article must be made to the Water Management Law, the Land Use Law and the "On Town Building Activity Regulation.

Alternatively, the concession regime can be introduced de facto by regulations ordering the MEF to organize tenders for greenfield SHP-projects and for SHP-plants with the award of lease rights and water usage rights being given to the winner for the same lengths of time; e.g. 25 years. The option will be introduced through the rules and conditions being defined in the tender documents. Draft documents for the land lease and for the water usage permit will be included in the tender documents. This secondary legislation would reference to the same three laws as the specific Act and to the Public-Private-Partnership Law.

In both cases, the issue of a CMU decree is required to impose collaborative action on the public institutions that involved in the regulatory framework for new SHP-projects. The decree would instruct the MEF (or the National Water Resource Authority) to act as responsible coordinating authority for the preparation and implementation of SHP-tenders on a river basis. The decree would ban new transfers of state and local government owned SHPs and land leases to private investors until a SHP-development plan had been prepared for the river where the project site is located.

5.3.4 RATIONALIZATION OF THE PERMIT PROCESS POST-CONCESSION TENDER

The private developers point to a number of procedures and requirements in the permit process that could be simplified without loss of quality; e.g. design criteria that make sense for large hydropower plants but not for SHPs. It is recommended to hire a consultant with solid international experience in design of SHPs to review where in the permit process changes could be made to reduce transactions costs without negative impact on the objectives of the permit processes.

5.4 INTERIM STEPS AND MINIMALIST FALL-BACK SOLUTION

5.4.1 POLICY FOR UNSOLICITED REQUESTS FOR LEASES OF SHPS AND OF HYDROPOWER LAND

While the Government mulls the introduction of a formal concession regime and the preparation of tenders by river basin, it can already adjust the presently practiced permit regime, where private developers take the initiative to identify projects.

A first step which can be adopted through a CMU-decision is to impose obligatory tenders for all sale and lease of SHPs owned by the state or local Government whenever a developer approaches the relevant public owner to acquire the pertinent lease rights, and the public authority is interested in handing over its ownership/operational responsibility.

A second regulatory innovation, which can be introduced by the same CMU decision or by a separate CMU-decision, is to introduce obligatory tenders for all lease of land for greenfield SHP-sites in the development of which a developer has shown an active interest. The scheme could operate as follows:

- Developer identifies a site.
- Obtains a permit to undertake the resource measurements and to develop the project.
- Presents the project to the authority.
- Authority organises a tender for the right to implement the project.
- In the case the developer does not get awarded, the developer receives a compensation for the project development cost from the winning bidder.

The above scheme would presumably satisfy EBRD procurement rules.

5.4.2 LOCAL COMMUNITIES TO TENDER 'DE FACTO' CONCESSIONS FOR GREENFIELD SITES

The MFE is to encourage local authorities, who in their land development plans have identified sites for SHPs, the tender these sites by combining the right to a 25 years lease of land with

the right to a 25 years water permit. The local authority would need to receive technical assistance from transaction advisors. This could be facilitated by the EBRD's USELF office.

5.4.3 FALL-BACK POSITION

In case the introduction of a concession regime proves not be politically viable, e.g. because of the public preparation costs involved, or because of the absence of donor finance for technical assistance or because the time frame for implementation is considered too long²¹, the continuation of the adjustments outlined in 5.4.1 and 5.4.2 would be the fall-back position.

5.5 LEGAL ISSUES TO SOLVE

5.5.1 MINISTRY RESPONSIBLE FOR HYDROPOWER CONCESSION ACT

Which Ministry would be the most appropriate to develop the Hydropower Concession Act? The Ministry of Energy and Fuel (MEF) or the Ministry responsible for the management of Water Resources?

5.5.2 REPLACEMENT OF FINANCIAL CONTRIBUTION TO COMMUNITY DEVELOPMENT BY CONCESSION FEE

Can this be done through a decree by CMU or is it necessary to modify the Law "On Regulation of Town Building Activity" by a single new article: "In the case of tendered concessions for hydropower projects, the requirement for a financial contribution by the developer to the development of local infrastructure is replaced by the payment of the concession fee. The revenue will be shared between the local and the regional government according according to a formula fixed by CMU decree".

5.5.3 ORGANISING THE TENDERS AS DBOT PROJECTS

One can call DBOT a concession-arrangement, or a Public-Private-Partnership arrangement. The point is that all ownership to the assets and all leased land (by definition) returns to the public at the end of the concession/land lease period. Which authority can impose this requirement for SHP and SHP-greenfield site tenders? CMU, ME or MEF?

5.4.4 ORGANISING THE TENDERS WITHIN AN APPROVED PLAN FOR SHP-DEVELOPMENT ON THE RIVER

Which authority could impose the rule that SHP-projects are to be tendered with reference to a (water management) plan for the river-basin, including a moratorium on transferring lease or property rights until such a plan has been prepared for the concerned river? The MEF as being responsible for promoting SHP? Ministry of Environment for safeguarding the environment? National Water Resource Authority for being responsible for the proper management of the water resources, including flood control? What would be the appropriate legal instrument? A law or simple regulation or an agreement – Memorandum of Understanding – between all parties that are involved in the permits?

5.4.5 PERMISSION TO SELL SHPS WITH CAPACITY LOWER THAN 0.5 MW

A banality limit is needed for the application of the BOT-modality. Which legal instrument is required to authorize sales of SHPs smaller than 0.5 MW or to implement leases of greenfield land for plants smaller than 0.5 MW without use of BOT and allowing lease periods of 50 years?

²¹ In Albania, Montenegro and Macedonia it took two years from the start of the consulting work and until the first multiple-projects tender had been held and concessions been awarded.

ANNEXES

ANNEX I: PROCEDURE OF REGISTRATION OF LAND LOTS FOR CONSTRUCTION OF NEW HYDRO POWER PLANTS

1. The legal entity (hereinafter - applicant) interested in obtaining a lot of land for location of the new facility for construction of a hydro power plant shall apply to the head of corresponding regional state administration or to the chairman of the village soviet with an application for approving a place of location of land lot for construction of a hydro power plant.

2. The application shall specify the desired approximate size and area of the land lot (in square km.) and the desired place of location of the facility on planning cartographic material with the scale of 1:2000 - 1:10000. To the application shall be annexed:

- Certificate of state registration of legal entity (copy); certificate on entering to the unified state register of enterprises, establishments, organizations of Ukraine (copy);
- Extract from the articles of legal association according permitted types of activity (copy);
- Site plan of land lot location area in the scale of 1:2000 - 1:10 000 with pointing of the land lot's place of location;
- Substantiation of necessity of land lot allocation. This substantiation shall be executed as part of the Feasibility Study
- Feasibility study for the construction of the hydro power plant.

According to the Decree of Cabinet of Ministers of Ukraine from February, 18, 2009 #113 to this list shall be added one more point:

- Notarized written consent of land user (landowner) on the exception (redemption) of land lot (its part) defining the sizes of the land lot foreseen for an exception (redemption) and terms of its exception (redemption).

The above mentioned documents shall be submitted together with official template of *Request (Application) about choosing of place of land lot location*. This template of *Request (Application)* is approved by the Decree of Cabinet of Ministers of Ukraine dated February, 18, 2009 #113.

3. In cases of land granting for construction of HPP that can entail substantial consequences for a region, land allocation for construction on the areas of bedding of minerals requires obtaining of special permission on land lot allocation.

In accordance with positions of the Forest Code of Ukraine, the change of designated purpose of forest land lots with aim of their use for industrial construction (including power facilities) comes true mainly due to areas occupied by bushes and other plants of minor value.

Change of designated purpose of forest land lots comes true by approval with the territorial organs of central organs of executive power on forestry issues environment protection.

Decision on extraction of timber and bushes shall be made on a concordance with the territorial organs of central organ of executive power on forestry issues environment protection.

4. The proper Rada / Administration registers a solicitation in the day of its submission with appropriation of registration number, considers a solicitor and in an a week's time transfers it

to the constantly operating commission on issues related to land use and developing documentation (hereinafter commissions) from organizations.

The commission is composed of the deputy chairman of the village, settlement, municipal soviet or deputy chairman of local state administration (presiding commissioner), and also representatives of district (municipal) organ of the land resources, nature protection organ, sanitary and epidemiological service, organs of urban planning and architecture and cultural heritage protection.

In case of necessity is possible concordance of land lot location with DSO (Oblenergo) and State Forestry Economy.

5. The commission analyses the full set of submitted documents. In case of detection of unreliable or incomplete information needed for the further consideration of an application it sends a sheet with remarks to the address of the applicant; who in case of possibility of prepares the required materials for the further consideration by the regular committee.

6. The commission during three weeks from the moment of submission of full set of documents to the solicitor gives its conclusion.

In case of land lot allocation within mountain locality the commission can involve its work representatives of geological control and organs of state mountain supervision for obtaining of additional information on possibility of land lot choosing.

To work in the commission are also involved owners and users of land lots that are offered to elimination, representative of an applicant.

7. Every organ participating in composition of the commission and other entities participating in approving of land lot location place have the right to make offer in a conclusion within the limits of its competence existent limitations (burden), terms of allocation, elimination or change of the special purpose of land lot taking into account urban planning documentation, local rules of construction, complex development of the territory and other current legislation; and also are under an obligation to give present information on violation of requirements of current legislation by an applicant.

8. In the case of negative conclusion, there must be the reasoned decision about refuse. This conclusion can be appealed in a court.

9. After obtaining the decision from the Commission approving the place of the location of a facility, the pertinent public or local self-government authority within a two-week's time examines the materials approving the location of the facility and issues permission on development of the *Project of land developing in relation land lot allocation for construction of small hydro power plant*, and issues a permission on developing of the *Urban planning conclusion of land lot limits for HPP construction*, which is inalienable part of the land allocation design.

In a decision/order shall be foreseen introduction of the new facility to the general layout of settlement, or its upgrading taking into account location of new power plant.

Designated purpose setting of land lot which is given in a lease for construction and maintenance of the small hydro power plant, according to classification of types of the designated purpose of land (CTDPL) :*For location, construction, exploitation and maintenance of buildings and constructions of the facilities of power generating enterprises, establishments and organizations.*

10. After obtaining of an order/ decision the applicant enters into agreement on developing of the Project of land according land lot allocation for construction of hydro power plant with an entity which is licensed on realization of works on land developing under the law.

11. Documents that shall be submitted for registration of the land lot allocation design: (i) Decision of organ of local self-government (order of administration) about issuing a

permission for development of land allocation design. (ii) Application for development of the design, (iii) Agreement with design organization (iv) Task for works implementation issued and ratified by the district department of State Land Comity (Dergkomzem), (v) extraction from the General Plan of district construction (department of architecture). (iv) Documents of entitlement of legal entity. All copies of the documents shall be notarized.

12. After its developing land allocation design shall be approved by the Commission on consideration of the issues related to concordance of land developing documentation; members of the Commission shall be following representatives of:

- 1) department of architecture and urban planning;
- 2) sanitary unit;
- 3) ecology and natural resources;
- 4) department of Dergkomzem;
- 5) department of architecture and cultural heritage protection and so on.

If it will be necessary might be needed a concordance of land lot location by Regional Water Household and Regional Forestry Household.

13. Upon obtaining of Commission decision, technical documentation shall be binded together in three copies and submitted on state expertise of land developing documentation to the Regional Main Administration of Land Resources.

For entering of land developing and geodesic data on land lot to the database of the automated System of Land Cadastre Keeping shall be created exchange file – electronic file of data exchange on results of land developing and geodesic works; shall be filled registration card, which shall be included to the Land Register Journal.

14. Upon obtaining of positive decision of state land developing expertise an applicant applies to the corresponding administration with a solicitor about grant of land lot in lease for the term of implementation of design and surveying works and facility construction.

In an application shall be defined area and place of location of land lot, its designated use purpose according to the approved design of land developing.

15. An application shall be registered and draft order/ decision is being prepared «On approving of land developing design according land lot allocation and its transmission in the lease for construction and maintenance of hydro power plant.

In case when in the submitted materials are absent documents which ground term of implementation of design and survey works and construction of facility (location) the land lot shall be granted in a lease for 1 year term.

16. On the regular meeting administration examines land use design and makes corresponding order/ decision.

17. Refuse of administration to *grant a land lot in lease* or keeping a solicitor without consideration in the set term can be appealed in the judicial order. Decision about refusal of grant of land lot in a lease must contain reasoned explanations with reference to corresponding positions of regulatory acts, ratified urban planning documentation and land developing documentation.

18. An applicant, according to obligations pointed in a corresponding order/decision within one month term shall formalize a document which certify right on land lot.

19. After obtaining the document certifying right on land lot use, an applicant enters into a *contract on development of detail design of facility construction* with a physical or legal entity which holds a corresponding licenses.

In the process of HPP designing and construction it is necessary to foresee and provide:

- establishment of sanitary-hygienic, protective zones and zones of supervisions around the power energy facility and mode of land use in these zones;
- compensation of losses caused by an exception (by redemption) and temporal occupying of land lots to land owners and land users, establishment of limitations according their use, worsening of quality of the ground cover and other useful properties of land lots or making them useless for use and receiving less of profits in connection with temporal un use of land lots;
- compensation of losses of agricultural and forestry production caused by exception of agricultural and forestry lands;
- removal on the site areas of fertile layer of soil and its warehousing with further use for the improvement of underproductive lands, planting of greenery or for equipping with modern amenities of settlements;
- recultivation of lands, which were changed in the relief structure, ecological state of soils and maternal breeds and in the hydrological mode.

20. Not later than 1 year from the date of acceptance of order/decision «On approval of land developing design according land lot allocation and transmission in lease of land lot for realization of design and surveying works and construction of facility» an applicant is under an obligation to inform the Management of Architecture about motion of design and survey works, and 2 months before the completion term of land lot lease an applicant must submit to the Town Council the «General layout» Chapter of detail design and project of organization of construction with determination of limits of land lot on a period of construction which are approved by chief architect.

21. If in the process of realization of design and survey works turns out that for location of the facility is needed an additional land lot, or it is necessary to change its form, an applicant shall apply to the administration with a corresponding solicitor. Necessity of grant of additional land lot shall be reasoned in a solicitor, its area, sizes and designated purpose of use shall be specified. To the application shall be added:

- Certificate of state registration of legal entity (copy);
- Order/ decision about granting of land lot (copy);
- Plan of land lot allocation from the lend developing design (copy);
- Contract on land lot lease (copy);
- Reconciliation act on bringing of rent for land lot use;
- General Plan and Construction General Plan, which are approved by chief architect with pointing of limits of passed in a lease land lot and limits of additional land lot;
- Cadastre information on additional land lot in a form of plan of land lot allocation.
- Designers reasoning on necessity of grant of additional land lot.

22. If the expansion of land lot is foreseen without change of its designated purpose setting and installation on it of buildings and constructions then consideration of an application shall come true without procedure of approving place additional lot land location.

23. Commission analyses submitted complete set of documents and prepare a corresponding conclusion.

24. Management of Dergkomzem prepares draft order in accordance with recommendations of the commission and submits it for consideration of the administration.

25. Further consideration comes true in accordance with the above-mentioned points of this order.

26. Within a month after construction (installation) completion of the facility an applicant shall enter in a contract according preparation of *land-cadastral information* with physical or legal entity, which is licensed on realization of works from land developing. Land-cadastral information necessarily must contain: cadastral plan of land lot, act of concordance of limits land lot with users of contiguous land lots, money evaluation of land, which fulfills the designated purpose of the facility.

After obtaining of land-cadastral information an applicant shall apply to the management of Dergkomzem for a decision according limitations (burdens) which occur on land lot, also in a decision shall be defined designated purpose and functional use of land lot; and shall apply to the organ of Urban-Planning and Architecture for obtaining of decision according limitations (burdens), which operate on land lot, the term of lease of land lot shall be determined in a decision also.

27. Upon receipt of land-cadastral information an applicant shall apply to administration with a solicitor about *grant of land lot for maintenance of the commissioned facility*. In an appeal shall be specified area of land lot, its place of location, designated purpose of use depending on the located facility.

28. After signing of the order an applicant receives in the management of Dergkomzem a terms of reference and enters into agreement on developing of technical documentation on land developing according creation a *document certifying right on land use* with a person, which is licensed on realization of works from land developing works.

29. On the basis of technical documentation and after corresponding procedures which were marked higher, an applicant enters into the new contract of land lease for productive necessities and maintenance of buildings and constructions of hydro power plant.

30. Before beginning of deigning shall be conducted public hearings with participation of population and local authorities and responsible persons which take part in agreeing place of power plant location. Procedure of realization of the public hearings delays in time up to 3th months.

It should be noted that in case if construction of HPP will not require use of large area of land lot and will not touch contiguous land users (other administrative networks and so on), then the contract land lot lease shall be concluded for a *long-term term (49 years) period at once*; and it is necessary to submit solicitor on grant of land lot for construction and maintenance of the hydro power plant (with a right of redemption).

ANNEX II LIST OF DOCUMENTS WHICH SHALL BE SUBMITTED

II.1 DOCUMENTS FOR OBTAINING PERMISSION ON IMPLEMENTATION OF CONSTRUCTION WORKS

(In obedience to the Law of Ukraine "On planning and building of territories" from 20.04.2000 № 699-III; "Provision about the order of grant to permission on implementation of construction works" ratified by the order of State Construction of Ukraine from 05.12.2000 № 273).

1. Application from developer (customer) of the stated form;
2. Decision of executive branch of corresponding authority or local state administration about permission on construction of urban planning facility (original and copy);
3. Document certifying right of ownership of developer (customer) or land use right (including on the terms of lease) where will be located newly constructed facility (original and copy);
4. Complex conclusion of state investment expertise (Chernivtsi "Ukrinvestexpertise" (original and copy)), conclusions of other state expertises (originals and copies);
5. Documents about setting of responsible performers of works (construction superintendent, persons, which execute technical supervision, authorial supervision) :
 - an order of general contract construction organization about setting of performer of works (original and copy);
 - general magazine of works set to the standard concordantly to DBN (ДБН) A.3.1-5-96 "Organization of building production";
 - an order of developer (customer) about setting of worker of technical supervision (original and copy);
 - an order of design organization about setting of authorial supervision (original and copy);
 - magazine of the authorial supervision in 2 copies, executed concordantly with DBN (ДБН) A.2.2-4-208 "Statement about an architectural supervision after building of houses and constructions";
6. Design documentation approved in accordance with established procedure:
 - design documentation (D, BD);
 - building general layout (original and copy);
 - passport of facades of building (original and copy);
 - explanatory note.
7. An order (order and decision) of developer (customer) about approving of design documentation.

In case of realization of reconstruction, restoration, major repairs and technical retooling of houses, building and other objects without change of their special a customer (developer) except the decision of executive branch of corresponding advice about permission on building shall also submit copy of document proving right of ownership on a house or building or written consent of its owner on realization of the mentioned works.

II.2 DOCUMENTS FOR OBTAINING OF THE PERMIT ON SPECIAL WATER USE

1. Rules of exploitation of the storage pool
 2. Approval from the regional management of water resources
 3. Approval from the regional management of state fish protection
 4. Approval from the state ecological inspection
 5. Plan of the waterworks facility of storage pool
- Preparation of application about concordance of terms and obtaining of permission

II.3 DOCUMENTS FOR CERTIFICATE OF STATE COMMISSION ON ACCEPTANCE OF FACILITY IN OPERATION AND MAINTENANCE PHASE

List of executive and other documentation, that shall be submitted to the state parlor, working commissions at the acceptance into exploitation of the finished construction facilities according to the order № 21 from 27.01.2005 "On approving of forms of acts for an acceptance into exploitation of the facilities of finished construction, List of executive and other documentation, that shall be submitted to the state parlor, working commissions..."

1. State act is on ownership, use of land lot.
2. Permission of inspection of state architectonically-constructional control on implementation of construction works.
3. List of organizations that participated in execution of construction and installation works and signatures of technical and engineering employees responsible for its implementation.
4. Complete set of the working drawings under which was executed construction of the facility including brought into it changes within in the construction process.
5. Reference about basic technically-economic indexes.
6. Passports of external and internal equipment of building.
7. Acts on geodesic breakdown basis for construction, geodesic works in the process of construction, executive geodesic survey on completion of construction and equipping works for developing of related to the building territory with chart of actual layout of engineering networks (copy of executive survey shall be submitted to the geodesic service of organs of architecture (service of town-planning cadastre)).
8. Documents about the geological and geohydrology surveys of construction site and results of test of carrying strength of the ground basis under construction.
9. Passports on equipment and mechanisms, acts of working commission about the acceptance of equipment.
10. Documents about quality of materials, constructions and wares, that were used at implementation of construction and installation works.
11. Acts on the hidden works and arranging of separate responsible constructions.
12. Acts on test of the mounted equipment, technological pipelines, external and internal systems of cold and hot water supply, sewage system and ventilation, gas-supplying, arranging of drainage systems.
13. Analysis of water.
14. Acts about the compression (pressurizing) of inputs and outputs of engineering communications in the places of passing through the walls of basements.
15. Acts about the test of equipment of installation of telephones, television, signaling and automation.
16. Act about readiness of elevators to be exploited.
17. Certificates of local operating organizations proving that constructed external communications of cold and hot water-supply, sewage system, heat supply, electricity supply, gas supply, energy supply and connection, installed devices of accounting fulfill issued technical requirements of normal exploitation of the facility and are accept by them for service.
18. Acts of acceptance of the facility by working commissions (on buildings, constructions and accessory buildings of the productive, auxiliary purpose, that are included to the complement of the facility in case of necessity of commissioning in the processes of construction).
19. Acts about tests of equipment on its accordance to fire safety, explosion safety, lightning safety.
20. Acts of radiation inspection of the facility.
21. Acts about executed measures concerning building on sinking soils, underground mines, karsts.

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22. Magazine of works implementation, authorial supervision, materials of verifications by the organs of state supervision during the process of construction (prescriptions according removal of violations).
 23. Architectonically-technical passport of architectural facility.
 24. Reference on providing of the facility with personnel.
 25. Reference about implementation of works on developing and green planting of territory.
 26. Reference on the actual construction cost signed by customer and contractor.
 27. Reference from Bureau of Technical Inventory.

ANNEX III: LIST OF HYDROPOWER PLANTS AND SHPS FOR REHABILITATION

The 8 large hydro power plants are owned by state enterprise OJSC "Ukrghidroenergo".

Figure 5 - Large HPPs in Ukraine

Kiev HPP	388,8 MW
Kiev HPS	235,5 MW gen/ 135 MW pump
Kaniv HPP	444 MW
Kremenchug HPP	625 MW
Dnieper HPP	648 MW
Dniprodzerzhynsk HPS	352 MW
Kakhovska HPS	351 MW
Dniester HPP	702 MW
Dniester PSP	Implemented 3*(324/421) MW (project - 2268 MW, in pump mode 2947)

Figure 6 - Large Scale (more than 100 MW) HPPs

HPP name	Capacity	Details
HPPs on Dnipro river		
Kyivska HPP	388,8 MW	Average annual Power Energy production is 797 million kW*hours with water pressures 7.7-9.3 m.
Kyivska PSHP	235,5 MW gen/ 135 MW pump	Average annual consumption of Electrical Energy for water pumping is 290 million of kW*hours and average annual Electrical Energy production is up to 200 GWh.
Kanivska HPP	444 MW	
Kremenchutska HPP	625 MW	Average annual Electrical Energy production is 1.5 TWh with water pressure 14.2 m.
Dniprovaska HPP	648 MW	Average annual Electrical Energy production is 4 TWh with water pressure 34.3 m.
Dniprodzerzhynska HPP	352 MW	Average annual Electrical Energy production is 1.3 TWh with water pressure 10.5 m.
Kahovska HPP	351 MW	Average annual Electrical Energy production is 1.5 TWh.
HPPs on Dnister river		
Dnistrovska HPP	702 MW	Average annual Electrical Energy production is 0.9 TWh.
Dnistrovska PSHP	Implemented 3*(324/421) MW (project - 2268 MW gen/ 2947 MW pump)	Water capacity of the turbines is 7*270 m ³ /sec. Nominal capacity of generators is 7x234 MW in generation mode and 7x421 in pumping mode.

Figure 7 - Characteristics of other large (more than 10 MW) HPPs

HPP name	Capacity	Details
HPPs on Dnipro river		
Tashlykska PSHP	320/450 MW	Owner NAEK "Energoatom" In HPP building there are 6 turbines with installed capacity 905 MW in generation mode and 1325 MW in pumping mode installed.
Oleksandrivska HPP	11,5 MW	Annual Electric Energy production is 123 GWh. In this unique HPP turbines are mentioned in HPP project 1948 and are under operation till nowadays. Hydro Units are considered as obsolete and worn but are in operating conditions.
Tereble-Ritska HPP	27 MW	Average annual Electric Energy production is 123 GWh. The turbines from 1948 are considered as obsolete and worn but are under operation condition.

Figure 8 - Small installed hydro capacity (<100 MW)

SHPP location	River	SHPP name	Power, kW	Owner	State and specifications
1	2		3	4	5
Vinnytsia oblast					
Gaysinsky r-n. Dmitrenky vil.	Soba	Dmytrenkivska	510	Ministry of Agrarian Policy	Built in 1952. Impoundment type. Has three frontal Kaplan type turbines with water pressure 9 m and water flow 8.4 m/sec
Yampil'skiy r-n, Slobodo-Bushanske vil.	Murafi	Slobodo-Bushanska	250	Ministry of Agrarian Policy	Built in 1955. Diversion type HPP. Has two frontal Kaplan type turbines. Water pressure of 5,6 m with water flow 8 m/sec water
Yampil'skiy r-n, Ivonivka vil.	Murafi	Ivonivska	240	Oblenergo	Built in 1941. Reconstructed in 1954. Diversion type
Yampil'skiy r-n, Skalopil'sk vil.	Murafi	Skalopil'ska	525	Oblenergo	Built in 1957. Impoundment-diversion type.
Braclavskiy r-n, Braclavsk town	South Bug	Braclavska	500	Minenergo	Requires reconstruction
Ladizhinskiy r-n, Glibochanske vil.	South Bug	Glibochanska	7500	Minenergo	Requires reconstruction
Ladizhinskiy r-n, Ladizhin town	South Bug	Ladizhinska	7500	Minenergo	Requires reconstruction
Sygys'kiy r-n, Sytsky town	South Bug	Sytys'ka	1000	Minenergo	Requires reconstruction

Vinnytsia r-n, Sabariv town	South Bug	Sabarivska	1050	Minenergo	Requires reconstruction
Bershads'kiy r-n, Chernyatka vil.	South Bug	Chernyats'ka	1400	Minenergo	Requires reconstruction
Mogiliv-podil'skiy r-n, Mogiliv-Podil'skiy city	Derla	Berezivs'ka	105	Ministry of Agrarian Policy	Hydroconstruction and building are in the satisfactory condition. Turbine has been repaired and it is used for pump drive in irrigation system. Requires reconstruction
Bershads'kiy r-n, Chapaeve vil.	Dohna	Chapaevs'ka	n/a	Ministry of Agrarian Policy	Built in 1951. Impoundment type, water pressure 7,2 m
Tulchins'kiy r-n, Kleban' uts	Selnytsya	Klebans'ka	60	Minenergo	Requires examination and HPP renewal project
Yampil'skiy r-n, Gal'zhbiivka vil.	Murafi	Bila (Gal'zhbievska)	256	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Yampil'skiy r-n, Myronivka vil.	Murafi	Myronivs'ka	150	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Yampshs'kiy r-n, Pysarivka uts	Rusava	Pysarivs'ka	256	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Bershads'kiy r-n, Shumilov vil.	South Bug	Shums'ka	125	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Tomashpils'kiy r-n, Klembiv uts	Rusava	Klembivs'ka	64	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Vinnytsia r-n, Brailiv vil.	South Bug	Brailivs'ka	200	Ministry of Agrarian Policy	Requires examination and HPP renewal project

Dnipropetrovsk oblast

Vasil'kivs'kiy r-n, Vasil'kivka uts	Vovcha	Vasil'kivs'ka	480	Ministry of Agrarian Policy	Installed three horizontal units. Equipment is lacking. Hydroelectric power plants are in the emergency condition. Comprehensive measures for cleaning the river channel, reservoir, revival of the conservation zone are needed. Requires examination and HPP renewal project
Zhytmyrs'ka oblast					
Dzerzhyns'kiy r-n, Myropil' uts	Sluch	Myropil's'ka	527 (200)	Ministry of Agrarian Policy	Works one unit. Two units need to be replaced. Major repairs of HPS and buildings, cleaning of reservoir, upstream and downstream should be held. Requires reconstruction
Lyabars'kiy r-n, Pedyunki vil.	Sluch	Pedynkivs'ka	327	Ministry of Agrarian Policy	Major repairs of HPP and buildings, reservoir cleaning and cleaning of the upstream and downstream should be held. Requires reconstruction
Lyabars'kiy r-n, Lyabar vil.	Sluch	Lyabars'ka	250 (200)	Ministry of Agrarian Policy	Major repairs of HPP and buildings, reservoir cleaning and cleaning of the upstream and downstream should be held. Requires reconstruction
Narodychivs'kiy r-n, Rossohivs'ke vil.	Uzh	Rossohivs'ka	250	Ministry of Agrarian Policy	Major repairs of HPP and buildings, reservoir cleaning and cleaning of the upstream and downstream should be held. Requires reconstruction
Zhytmyrs'kiy r-n, Zhytmyr city	Teteriv	Zhytomyrs'ka	450	Ministry of Agrarian Policy	Built in 1953. Impoundment type. Installed one turning-blade turbine. An estimated water flow is 14.5 m/sec and pressure of 4.35 m. The generator is of horizontal type.
Berdychivs'kiy r-n, Slobodyschya vil.	Gnylopjat'	Slobodyschens'ka	105	Ministry of Agrarian Policy	Built in 1953. Impoundment type with two vertical Kaplan-type turbines with a diameter of 54 cm. Equipment is lacking. Hydroelectric power plants are in the emergency condition. Requires examination and HPP renewal project
Zhytmyrs'kiy r-n, Trojaniv vil.	Gnylopjat'	Trojanivs'ka	250	Ministry of Agrarian Policy	Built in 1955. Impoundment type. Estimated water pressure is 4 m, water flow through the turbine is 4 m/sec. Two radial-axial units were set. To restore the maximum capacity of 250 kW the project activities is being held.
Korostens'kiy r-n,	Uzh	Voronivs'ka	178	Ministry of Agrarian Policy	Built in 1952. Impoundment type. Estimated water pressure is 4 m, water flow is 5,4 m/sec. One radial-axial unit with

Voronivs'ke vil.					capacity of 250 kW was set. Equipment is lacking. Hydroelectric power plants are in the emergency condition. Requires examination and HPP renewal project
Korostens'kiy r-n, Bardivo vil.	Uzh	Bardivs'ka	200	Ministry of Agrarian Policy	Built in 1957. Impoundment derivational type. One radial-axial unit with horizontal generator was set. The water pressure is 5 m. Requires examination and HPP renewal project.
Chyzhyns'kiy r-n, Povch vil.	Zheriv	Povchans'ka	250	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Zhytmyrs'kiy r-n, Lischyn vil.	Gujva, Gnylopjat' affluent	Lischyns'ka	250	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Popel'nyans'kiy r-n, Golybjatyn vil.	Rostavitsia	Golybjatyns'ka-1	110	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Popel'nyans'kiy r-n, Golybjatyn vil.	Rostavitsia	Golybjatyns'ka-2	250	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Zhytmyrs'kiy r-n, Pisky vil.	Gujva, Gnylopjat' affluent	Piskivs'ka	450	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Baranjevs'kiy r-n, Tartak vil.	Postel, Rostavitsia affluent	Tartakivs'ka	n/a	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Ruzhyns'kiy r-n, Bystriivka vil.	Postel, Rostavitsia affluent	Bystriivs'ka	n/a	Ministry of Agrarian Policy	Requires examination and HPP renewal project

Zakarpattia oblast

Uzhgorods'kiy r-n, Uzhgorod city		Uzhgorods'ka	1900	Oblenergo	Major repairs of HPP, cleaning of derivational chanel should be held. Requires reconstruction
Uzhgorods'kiy r-n, Onokivtsi vil.	Uzh	Onokivs'ka	2850	Oblenergo	Major repairs of HPP, cleaning of chanel and reservoir near the water tunell should be held. Requires reconstruction
Husts'kiy r-n, Nyzhniy Bystryj vil.	Tereblya-Rika	Tereble-Riks'ka	27000		Repair of the tray tunnel is needed. Requires reconstruction
Perechens'kiy r-n, Turija-Remits'ka vil.	Turija	Turija-Remits'ka	450 (350)	Oblenergo	Inoperative. Requires examination and renewal or building project of new HPP in this range.
Rajuv's'kiy r-n, Dylove vil.	Chorna Tysa	Dylovs'ka	n/a	Ministry of Agrarian Policy	Inoperative. Requires examination and renewal or building project of new HPP in this range.
Tyachivs'kiy r-n, Uglya vil.	Tereblya	Uglyans'ka	n/a	Ministry of Agrarian Policy	Inoperative. Requires examination and renewal or building project of new HPP in this range.
Svalyavs'kiy r-n, Kerets'ky vil.	Borzhava	Kerets'ka	250	Ministry of Agrarian Policy	HPS is completely destroyed. Project of building new HPP is required.
Tyachivs'kiy r-n, Ust'-Chorna vil.	Brusturans'ka	Ust'-Chornyans'ka	400	Ministry of Agrarian Policy	Requires examination and HPS renewal project
Ivano-Frankivska oblast					
Snyatyskyi r-n, Snyatyn town	Prug	Snyatynska	800	Ministry of Agrarian Policy	Reconstruction ended in 2005 by LTD "Gidrokaskad"
Yatsvernyanskyi r-n, Fitky vil.	Nadvirnyans'ka	Fietkivska	320	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Tlumatskyi r-n, Petryliv vil.	Zolota Lypa	Petrylivska	184	Ministry of Agrarian Policy	Requires examination and HPP renewal project

Galytskyi r-n, Tustan vil.	Gnyla Lypa	Tustans'ka	135	Ministry Policy	of Agrarian	Requires examination and HPP renewal project
Rogatyns'kiy r-n, Kon'yshky vil.	Gnyla Lypa	Kon'yshkivs'ka	80	Ministry Policy	of Agrarian	Requires examination and HPP renewal project
Naddvirnyans'kiy r-n, Yaremche town	Prut	Yaremchans'ka	79	Ministry Policy	of Agrarian	Requires examination and HPP renewal project
Snyatyns'kiy r-n, Zavallya vil.	Cheremosh	Zavalivs'ka	45	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Kosivs'kiy r-n, Roztoky vil.	Cheremosh	Roztoks'ka	33	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Kobaky vil.	Cheremosh	Volyts'ka	34	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Snyatyns'kiy r-n, Ustya vil.	Viloluch	Ustyans'ka	33	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Snyatyns'kiy r-n, Balyntsy vil.	Chornyava	Balyntsivs'ka	9	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Koseevsikiy r-n, Rozhniv vil.	Rybnytsya	Rozhnivs'ka	14	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Snyatyns'kiy r-n, Rudnyky vil.	Rybnytsya	Rudnykivs'ka	30	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Kolomijs'kiy r-n, Mativtsy vil.	Prut	Matiivs'ka	45	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal
Kolomijs'kiy r-n, Sheparivtsy vil.	Prut	Sheparivs'ka	35	Ministry Policy	of Agrarian	MicroHPP was installed on the mill built in 20-30 th years of 20 century. Requires examination and renewal

Kirovorads'ka oblast

Gajvorons'kiy r-n, Gajvoron town	South Bug	Gajvorons'ka	5700	Oblenergo	Under operation. Built in 1956. Impoundment type
Novoarkhangels'kiy r-n, Novoarkhangels'k town	Synyuha	Novoarkhangels'ka	1300	Oblenergo	Built in 1956. Impoundment type. Equipped with two vertical axial-type turbines with 140 cm wheel diameter and two power generators each of 850kW. Water pressure is 6.3 m and the estimated water flow is 18.6 m/sec. The station is automated. Requires reconstruction
Novoarkhangels'kiy r-n, Ternivka vil.	Synyuha	Ternivs'ka	1950	Oblenergo	Operative. Built in 1956. Impoundment type. The water pressure is 8,3 m.
Vil'shans'kiy r-n, Krasniy and Novoukrainskiy country seat and Pervomajskiy r-n Nikolaevska oblast	Synyuha	Krasnohutirs'ka	3300	Oblenergo	Built in 1956. Impoundment type. Water pressure is 12 m and the estimated water flow through the turbine is 37,2 m/sec. Equipped with three vertical axial-type turbines and three power generators of 1450 kW each. Requires reconstruction
Golovanivskiy r-n, Peregonivka vil.	Revuha	Peregonivs'ka	88	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Golovanivskiy r-n, Lebedynka vil.	Yatran'	Lebedyns'ka	200	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Malovyskiivskiy r-n, Berezivka vil.	Kshtin	Berezivska	200	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Ulyanovskii r-n, Sobatynivka	Synytsa	Sobatynivska	77	Ministry of Agrarian Policy	Water pressure 4.8 m, estimated water flow 1.57 m/sec. Requires examination and HPP renewal project
Kyivska oblast					
Skvyrskiy r-n,	Rostovytsya	Bukska microHPP	40	Privat	Works offline

Buky vil.					
Boguslavskiyi r-n, Dybentsi vil.	Ros'	Dybenska	550	Oblenergo	Built in 1955 p. Requires reconstruction
Boguslavskiyi r-n, Boguslav town	Ros'	Boguslavska	1250	Oblenergo	Built in 1951. Requires reconstruction
Boguslavskiyi r-n, Prusy-Bushevska vil.	Ros'	Prusy-Bushevska	150 (250)	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Lvivska oblast					
Starosambirskiyi r-n, Staryi Sambir town	Dnister	Starosambirska	250	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Drogobyt'skiy r-n Novoshychi vil.	Bystrytsya	Novoshytska	270	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Stryiskiyi r-n, Zavadiv vil.	Stryj	Zavadivska	450	Oblenergo	Requires examination and HPP renewal project
Mykolaivskiyi r-n, Demnya	Vubrya	Demnyanska	300	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Skolivskiyi r-n, Oryava vil.	Oryava	Oryavska	100	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Yavorivskiyi r-n, Yavoriv town	Sklo	Yavorivska	150	Firm "Novosvit"	Requires examination and HPP renewal project
Starosambirskiyi r-n, Tershiv vil.		Tershivska	150	Firm "Novosvit"	Requires examination and HPP renewal project
Mykolaivska oblast					

Domanskyi r-n, Botsanivka town	South Bug	Kostyantynivska	815	Oblenergo	Built in 1957. Impoundment type Water pressure 10 m. One vertical Kaplan type turbine with capacity of 800 kW, generator 950 kVA. Requires reconstruction
Pervomayskyi r-n, Migeyska vil.	South Bug	Migeyska	900	Oblenergo	Built in 1951. Requires examination and HPP renewal project. It is proposed to increase the overall capacity up to 1130 kW.
Arbuzynskui r-n, Kostyantynivka town	South Bug	Kostyantynivska	850	Oblenergo	Built in 1957. Requires reconstruction
Domanevskyi r-n, Oleksandrivka vil.	South Bug	Oleksandrivska	11000	NNEGC "Energoatom"	Built on downstream reservoir of Tashlytska PSHP. Capacity is 5000 kW till building of Tashlytska PSHP will be finished.
Pervomayskyi r-n, Pervomaysk city	South Bug	Pervomayska	2770	Oblenergo	Built in 1925-1929. HPP has: spillway dam (115 m), which create water pressure 4,25 m, and drain 34,8 m are connected from the left side. Requires reconstruction
Voznesenkui r-n, Oleksandrivka vil.	South Bug	Voznesenska	3000	Oblenergo	Built in 1927. Water pressure 3,5 — 5,5 m. Requires examination and HPP renewal project
Odeska oblast					
Saaranskyi r-n, Savran vil.	Savranka	Savranska	500	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Poltavska oblast					
Zinkevsiy r-n, Opishnya vil.	Vorskla	Opishnyanska	225	"Energostar"	HPP is renewed by PE "Energostar"
Bogachanskyi r-n, Ostapovo vil.	Psyol	Ostapivska	200	Oblenergo	Built in 1957. Water pressure 2,2 m, water flow 16,9 m/sec
Novosadzarskyi r-n, Kuntsevo vil.	Vorskla	Kuntsevka	400	Oblenergo	Water pressure 4,0 m, estimated water flow 13 m/sec. Installed Kaplan type turbines. Renewed in 2001.

Reshetylivskiyi r-n, Suhorabivka town	Psyol	Suhorabivska	330	Oblenergo	Built in 1957. Water pressure 2,9 m, estimated water flow 16 m/sec. Renuwed in 2001.
Velykobogachanskyi r-n, Bilotserkivka vil.	Psyol	Bilotserkevka	200	OJSC "Ukrgidroenergo"	Built in 1956. Impoundment-diversion type. Water pressure 2,2 m, estimated water flow 13 m/sec. Requires examination and HPP renewal project
Velykobogachanskyi r-n, Velykobagachansk town	Psyol	Velykobagachanska	378	Oblenergo	Requires examination and HPP renewal project
Gadyachynskiyi r-n, Rashyvka vil.	Psyol	Rashevka	160	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Gogolivskiyi r-n, Shyshakiv vil.	Psyol	Shyshakivska	550	Oblvodhoz	Built in 1956. Impoundment-diversion type. Water pressure 3,6 m and estimated water flow 18 m/sec
Myrgorodskiyi r-n, Velyki Sorochyntsi	Psyol	Velykosorochynska	340	Oblvodhoz	Built in 1958. Impoundment-diversion type HPP.It counts 3 axial turbines and generators of capacity 150 kw of each unit. Water pressure 3,2 m and estimated water flow 18 m/sec. Requires examination and HPP renewal project
Rivenska oblast					
Rivenskyi r-n, Malyniv vil.	Ikva	Malynivska	382	Oblenergo	Requires reconstruction
Sumska oblast					
Lebedynskui r-n, M. Vorozhba vil.	Psyol	Malovorozhbyanska	350	Oblenergo	Requires reconstruction
Sumskiyi r-n, Nyvy town	Psyol	Nyzivska	450	Oblenergo	Requires reconstruction
Lebedynskui r-n, Myhaikivka vil.	Psyol	Myhailivska	188	Oblenergo	Requires reconstruction

Lebedynskui r-n, Bobryk vil.	Psyol	Bobrivska	250	Oblenergo	Requires reconstruction
Lebedynskui r-n, Borovenka vil	Psyol	Borovenska	210	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Ternopil'ska oblast					
Zalivdytskyi r-n, Kasperivtsi vil.	Seret	Kasperivska	5100	Oblenergo	Requires reconstruction
Borivskiy r-n, Bilche-Zolote vil.	Seret	Bilche-Zolotivska	500 (300)	Oblenergo	Requires reconstruction
Terebovlyanskyi r-n, Dolyna vil.	Seret	Yanivska	572	Oblenergo	Requires reconstruction
Borivskiy r-n, Pyatnychany vil.	Zbrych	Pyatnychanska	440	Oblenergo	Requires reconstruction
Chortikovskiy r-n, Skorodyntsi vil.	Seret	Skorodynska	960 (840)	Oblenergo	Requires reconstruction
Monastyrskiy r-n, Koropets town	Koropets	Koropetska	300 (240)	Rented by «Novosvit» firm	Requires reconstruction
Monastyrskiy r-n, Vesniv vil.	Koropets	Vesnivska	1500	Ministry of Agrarian Policy	Requires reconstruction
Borshchivsky r-n, Kudryntsi vil.	Zbrych	Kudrynetska	600	Oblenergo	Requires reconstruction
Zalishchytskyi r-n, Nyrkiv vil.	Dzhyryni	Chervonogradska	386	Ministry of Agrarian Policy	Water pressure is up to 25,4 m, water flow 0,5-2,5 m/sec. Requires examination and HPP renewal project

Ternopilskiyi r-n, Dychkiv vil.	Gnivna	Dychkivska	230	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Ternopilskiyi r-n, Ivashev-Dlishnii vil.	Seret	Ivanchevo-Dlishytska	250	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Buchanskyi r-n, Bucha city	Strypa	Topolkivska	400	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Zborivskiyi r-n, Vertelka r-n	Seret	Vertelkivska	125	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Kozivskiyi r-n, Plotycha vil.	Strypa	Plotytska	230	Buoght by PMP "INKO"	HPP has large water reservior. Requires examination and HPP renewal project
Butanskyi r-n, Osivtsi vil	Strypa	Osivetska	125	Buoght by PMP "INKO"	Requires examination and HPP renewal project
Monastyrskiyi r-n, Zadariv vil.	Zolota Lypa	Zadarivska	125	Buoght by PMP "INKO"	Built in 1958. Water pressure 2,4 m, water flow 5,7 - 17,9 m/sec. Requires examination and HPP renewal project
Zbarazhskiyi r-n, Ivanchany vil.	Gnizdechka	Ivanchivska	250	Minprombud	Requires examination and HPP renewal project
Buchanskyi r-n, Bucha city	Strypa	Buchanska	н/д	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Berezhanskyi r-n, Berezhany town	Bila	Berezhanska	н/д	Oblenergo	Requires examination and HPP renewal project
Zborivskiyi r-n, Zaliztsi town	Seret	Zaliztsivska	250	Ministry of Agrarian Policy	Built in 1957. Dam creates a large water reservior (Rybgosp). Requires examination and HPP renewal project

Kharkivska oblast

Izyumskiyi r-n, Oskol city	Sokol	Chervonooskolska	2680	Energochermet	Requires reconstruction
Kharkivskiyi r-n, Kharkiv city	Kharkiv	Travyanska microHPP	5	Private Enterprise	Real capacity of HPP may be of 35 kW. Requires reconstruction
Khersonska oblast					
Velykooleksandrivskiyi r-n, Velyka Oleksandrivska city	Ingulets	Oleksandrivska	280	Ministry of Agrarian Policy	Impoundment type HPP. Requires examination and HPP renewal project
Khmelnytska oblast					
Letchivskiyi r-n, Novokostyantynivka vil.	South Bug	Novokostyantynivska	1140 (525)	Firm "Novosvit"	Built in 1926. Impoundment type HPP
Kamyanets-Podilskiyi r-n, Niverky vil.	Zbruch	Niverkivska	840	Oblenergo	Requires reconstruction
Gorodetskiy r-n, Martynkivtse vil.	Zbruch	Martynkivska	750 (600)	Oblenergo	Impoundment type HPP. Requires reconstruction
Cheremivetskiy r-n, Bondariv vil.	Zbruch	Badnarivska	700 (600)	Firm "Novosvit"	Impoundment type HPP. Requires reconstruction
Letchivskiyi r-n, с. Щедрівка	South Bug	Shchedrivska	640	Firm "Novosvit"	Rented by "Novosvit". Renewed. Under operation and works without reconstruction.
Cheremivetskiy r-n, Zhabytsi vil.	Zbruch	Letavska (Zhabytsivska)	420	Private. LTD "Sibeks"	Built in 1952. It has 2 Kaplan type turbines with 180 cm wheel diameter and capacity 210 kW of each unit. Requires reconstruction.
Iziaslavskiyi r-n,	Goryn'	Myslyatynska	658	Ministry of Agrarian Policy	Requires examination and HPP renewal project

Myslyatyn vil.					
Starokostyantynivskiyi r-n, Korzhev vil.	Sluch	Korzhivska	400	Firm "Novosvit"	Built in 1953. Impoundment type HPP. Examination and HPP renewal project are carrying out.
Kamyianets-Podilskiyi r-n, Tsvikliv vil.	Smotrych	Tsvyklivska	525	Oblenergo	Built in 1952. Diversion type HPP. Estimated water pressure 8 m. Installed 2 frontal Kaplan-type turbines with 84 cm wheel diameter and 2 generators 410 kVA of each unit. Requires examination and HPS renewal project
Dunaivskiyi r-n Mynkovets vil.	Ushytsya	Mynkovetska	300	LTD «Ranok»	Built in 1953. Impoundment type HPP. Estimated water flow 4,5 m/sec, Water pressure 5,5 m Requires examination and HPP renewal project
Cheremivetskyi r-n, Kochubiiv vil.	Zhvanchyk	Kochubiivska	н/д	Ministry of Agrarian Policy	Built in 1952. Diversion type HPP. Estimated water pressure 5,5 m and water flow 2,26 m/sec. Requires examination and HPP renewal project
Gorodetskyi r-n, Sataniv town	Zbruch	Satanivska	176	Private. OJSK "DEZ"	Requires examination and HPP renewal project
Dunaivskiyi r-n Velyka Kuzhylivka vil.	Ushytsya	Kuzhylivetska	500 (200)	Firm "Novosvit"	Requires examination and HPP renewal project
Volochynskiyi r-n, Vochkivtsi vil.	Zbruch	Vochkivetska	250	Ministry of Agrarian Policy	Built in the end of 30 th of 20 th century. Requires examination and HPP renewal project
Volochynskiyi r-n, Tarnoruda vil.	Zbruch	Tarnorudska	250	Ministry of Agrarian Policy	Built in 1957. Requires examination and HPP renewal project
Izyaslavskiyi r-n, Kuniv vil.	Viliya	Kunivska	75	LTD «Kunivske»	Built in 1950. Requires examination and HPP renewal project
Izyaslavskiyi r-n, Izyaslav City	Goryn'	Izyaslavska	n/a	Ministry of Agrarian Policy	Built in 1928., Stopped in 1948. Requires examination and HPP renewal project

Dunaivskiyi r-n Velyka Kuzhylivka vil	Ushytsya	Velyko-Kuzhylivska	500	Firm "Novosvit"	Built in 1962. Private property. Requires examination and HPP renewal project
Kamyanets-Podilskiyi r-n, Zaluchchya vil.	Smotrych	Zaluchiivska	230	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Kamyanets-Podilskiyi r-n, Zavallya vil.	Zbruch	Zavalivska	176	Ministry of Agrarian Policy	Requires examination and HPP renewal project
Polyanskyi r-n, Nova Luban vil.	Homora	Novo-Lubanska	200	Oblenergo	Requires examination and HPP renewal project
Letychivskiyi r-n, Letychiv city	South Bug	Letychivska	н/д	Ministry of Agrarian Policy	Bought by rescue station on the water. Requires examination and HPP renewal project
Polyanskyi r-n, Poninka town	Homora	Poninkivska	н/д	Ministry of Agrarian Policy	Bought by Punkivskiyi KPK. Turbine is used for pump drive. Requires examination and HPP renewal project
Letychivskiyi r-n, Medzhobizh	South Bug	Medzhobizhska	175	Oblenergo	Requires examination and HPP renewal project
Cherkaska oblast					
Korsun-Shevchenkivskiyi r-n, Korsun-Shevchenkivskiyi city	Ros'	Korsun-Shevchenkivska	1740	Firm "Novosvit"	Built in 1938 with Capacity 1650 kW. Impoundment-diversion type HPP. Installed 2 Kaplan type turbines with capacity 870 kW of each unit
Korsun-Shevchenkivskiyi r-n, Stebliv town	Ros'	Steblivska	2850	Firm "Novosvit"	Built in 1952. Impoundment type HPP. Installed 2 Kaplan type turbines.
Talnivskiyi r-n Gordashivka vil.	Girs'kiy Tikych	Gordashivska	400	Firm "Novosvit"	Renewed by firm "Novosvit"

Umanskyi r-n, Dubovo vil.	Yatran'	Dubivska	300	Ministry of Agrarian Policy	Requires reconstruction
Umanskyi r-n, Ostrivets vil.	Yatran'	Ostrivetska	200	Ministry of Agrarian Policy	Requires reconstruction
Lysyanskyi r-n, Lysyanka town	Girs'kiy Tikych	Lysyanska	260	Firm "Novosvit"	Renewed in 2004 by firm "Novosvit"
Mankivetskyi r-n, Buky town	Girs'kiy Tikych	Bukska	570	Firm "Novosvit"	Built in 1928. Diversion type HPP. Water pressure 18,6 m, water flow 4,22 m/sec.
Mankivetskyi r-n, Yurlivka town	Girs'kiy Tikych	Yurpilska	520	Firm "Novosvit"	Built in 1956. Impoundment type HPP. Requires examination and HPP renewal project
Talnovkyi r-n, Kryvyh Kolin vil.	Girs'kiy Tikych	Kryvokolinska	324	Firm "Novosvit"	Impoundment type HPP. Water pressure 3,4 m. Installed 2 Kaplan type turbines with capacity 62 kW of each unit with water flow of 11 m/sec, Horizontal generators with capacity of 250 kW. Examination and research and development activities and HPP renewal project are carrying out.
Katerynopilskyi r-n, Lotashevo vil.	Girs'kiy Tikych	Lotashivska	375	Firm "Novosvit"	Impoundment type HPP, water pressure 5 m. Installed 3 vertical Kaplan type turbines With water flow of 7,8 m/sec. Examination and research and development activities and HPP renewal project are carrying out.
Talnovkyi r-n, Talne city	Girs'kiy Tikych	Talnovska	400	Ministry of Agrarian Policy	The development of HPP renewal project is required
Zvenogorodskyi r-n, Zvenygorodka city	Girs'kiy Tikych	Zvenygorodska	250	Ministry of Agrarian Policy	The development of HPP renewal project is required
Zhashkivskyi r-n, Vorone vil.	Girs'kiy Tikych	Voronyanska	170	Ministry of Agrarian Policy	The development of HPP renewal project is required
Lysyanskyi r-n,	Girs'kiy	Budyshanska	н/д	Ministry of Agrarian	The development of HPP renewal project is required

Budyshche vil.	Tikych			Policy	
Lysyanskyi r-n, Chaplunka vil.	Girs'kiy Tikych	Chaplunska	н/д	Ministry of Agrarian Policy	The development of HPP renewal project is required
Lysyanskyi r-n, Semenivka vil.	Girs'kiy Tikych	Semenivska	н/д	Ministry of Agrarian Policy	The development of HPP renewal project is required
	Girs'kiy Tikych	Lypovetska	н/д	Ministry of Agrarian Policy	The development of HPP renewal project is required
Chernigivska oblast					
Chernigivskyi r-n, Sedniv town	Snov	Sednivska	235	Oblenergo	Built in 1954. Requires reconstruction
Chernivetska oblast					
Vygensky r-n, Myliivska vil.	Cheremosh (channel)	Mylievska	200	Ministry of Agrarian Policy	The development of HPP renewal project is required
Vygensky r-n, Banitiv vil.	Cheremosh (channel)	Banyivska	100	Ministry of Agrarian Policy	The development of HPP renewal project is required
Pugylivskyi r-n, Yablunytsya vil.	Biliy Cheremosh	Yablunytska	650	Firm "Novosvit"	Examination and research and development activities and HPP renewal project are carrying out.
Glybotskyi r-n, Kamyanka vil.	Seret	Kamyanska	525	Ministry of Agrarian Policy	The development of HPP renewal project is required
Vygensky r-n, Ispas vil.	Cheremosh (channel)	Ispaska	100 (1000)	Ministry of Agrarian Policy	The development of HPP renewal project is required
Vygensky r-n, Nyzhni Petrivtsi vil.	Maliy Seret	Nyzhnopetrivska	130	Ministry of Agrarian Policy	Built in 1957. Impoundment-diversion type HPP. Water pressure 5,8 m Capacity 130 kW. The development of HPP renewal project is required

