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Pilot project on Technology Foresight for Regional Innovation & Investment Development in the Euroregion "Upper Prut"

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On the way to Europe Ukraine should pay more attention to the development of its administrative-territorial units in spirit of "Europe of Regions". This direction of Ukrainian Interior & Foreign Policy becomes now the core element of the National Program for the Integration into EU as well as of the Concept for the State Regional Policy. This thesis was approved by the Edicts of the President of Ukraine in 2000-2001 and by Decree of Ukrainian Parliament at January 2002. Simultaneously the Committee for EU-Ukraine collaboration at 11.03.2002 marked transfrontier & interregional collaboration as an additional priority for bilateral co-operation/

In general, the implementation of Technology Foresight (TF) approach in Ukraine [1] aimed to predict further development of its basic sectors as well as of large enterprises, which till now constituting the skeleton of Ukrainian Economy. But TF in Ukraine also mast appreciate last European challenges for linking the regional aspects at the eve of the EU Enlargement [2].

The objective of this paper is to elucidate the main peculiarities of such investigation specified by *a)* the geopolitical features of Ukrainian State & its Regions [3], *b)* their "genetic memory" [4] and *c)* nowadays comprehension of Safety [5].

From 25 Regions of Ukraine 19 are border. And they are grouped for transfrontier collaboration: in North (neighbouring with Belorussia), East (neighbouring with Russia), South (Black Sea area) and Western (new EU border — CEE countries). Evidently that this vicinity has a general influences both for every group in whole and for concrete situation & infrastructure in the each detached border territorial unit [3].

The area of new EU (and NATO) eastern borders from Baltic till Black Sea already became very actual problem for European Union. Ukraine occupies here the outstanding position as the single NIS State that has common borders with all boundary CEE Candidate countries: Poland, Slovakia, Hungary, Romania and also Bulgaria & Turkey. Along these borders is absent now any infrastructure for further transfrontier co-operation and even a lack of the legal basis to construct such collaboration. Conservation of such situation will soon provoke necessity for rebuilding here new kind of "iron curtain" or new "Kerson Line".

For this issue Ukraine holds an active position in creation of Euroregions "Bug", "Carpathian", "Upper Prut" & "Lower Danube" to "cover" completely these areas together with regional units of neighbour Candidate States. Both from western and eastern sides of this border there are in discussion different approaches how to develop infrastructure of a "ramp", which should implement modern Market & Safety mechanisms into these many centuries boundary territories.

European experience shows that near-border regions (especially multi-ethnic, mountain, densely populated) become depressive if they are locked only to the interior resources & subsidies from mother countries. And conversely - development of transfrontier co-operation (trading, tourism, transport corridors, banks, communications, cross-border infrastructure) makes their Economy more flexible & attractive for investments and increase enhances employment. life standards and, correspondingly, the incomes to the local & state budgets.

For this case the inter-ethnic issues, declined under depressive status of Region, will be transformed into additional investments in a way of mutual placement of funds on both sides of the border as well as by the regional Diaspora in developed countries.

The Economy of all western Ukrainian Oblasts along the new EU border was formed in the time of Austrian Monarchy. Till today the neighbour CEEC & Ukraine border regions have linked Water, Energy and Mineral Resources, close Transport & Trading Systems, Forestry, Productions of Wood, Food, Construction, Machines, Electronics and Light Industries, Oil, Gas and Shale Sources etc. Together with kin Agriculture Complexes, Municipal Problems & Services, Medical-Recreational Institutions & Reservations as well as potential for Tourism - these links demonstrate interdependency for further Sustainable Spatial Development in Carpathian-Danube Region [6].

By the Decree of Ukrainian Government Nr. 53-p of 14.02.2002 Chernivtsy Oblast' (Fig. 1) in the frame of the Euroregion "Upper Prut" (population near 3 Mio, total area near 29000 sq. km) (Fig. 2) was selected as pilot zone for investigation of this approach (Fig. 2). Chernivtsy Oblast' is the smallest in Ukraine, but it traditionally has the most multi-nationality population. Among other western Ukrainian Oblasts and Euroregions Chernivtsy & "Upper Prut" have the following peculiarities.

1. Chernivtsy oblast' unites now northern parts of former Bukovina Land of the Austrian Monarchy and Khotin County of Russian Bessarabia. Both these areas for many centuries developed as border regions and played important transit role for East-West and South-North communications in the Europe.

2. In contrast of other CEEC/NIS Euroregions the Council of Euroregion "Upper Prut" consists only of the first persons of its Members. From the very beginning Regional & State Founders of this Euroregion foreseen "horisontal" & "vertical" links between the territorial and central authorities of Ukraine, Romania & Republic of Moldova [7].

Further collaboration in this Euroregion aimed to realise the new definition of transfrontier co-operation established by [8]. Now "Upper Prut" is the single Euroregion , which has constant EU regional Partners: Austrian Land Kärnten, Bavarian Bezirk Schwaben & French Department of Mayenn. And now it's already foreseen such partnership with Regions of Poland & Russia.

3. Sustainable Spatial Development of regions becomes now the most efficient European approach for the actual global, national, macro- & micro-regional and local issues. In "classic" sense Sustainable Development perceived as a path for anthropogenic activity that should provide quality of the subsistence for today's and future Generations. Nowadays understanding of Safety (economical, environmental, technogenic, national etc.) opens in Sustainable Development new facilities of regional survival for all mentioned levels [5].

To realise this approach in the framework of Euroregion "Upper Prut" was created EcoEuroRegion as a model for further expansion in whole Carpathian-Black Sea Region [9]. In 1997-2000 this idea find an appreciable support from the Presidents of Ukraine, Romania, Republic of Moldova, as well as from the above nominated EU regional Partners and also in NATO [5]. The most essentially approval for such approach was formulated in the Declaration [6] and Resolution [10].

On the base of common decisions [11], this approach was demonstrated at European Forums [6, 10] as a perspective facility for the main issues in the Region as well as for the Danube Program [12]. The enclosed Scheme (Fig. 1) shows, that the environmental problems in the basins of the border rivers (Danube, Dniestr or Niemen) can become a "loop on the neck" for the further development of these regions. The crucial change of the post-communist Economy alters here not only the single enterprises, but completely the whole economical sectors. And last disasters in Romanian parts of the river basins of Tisa & Siret intuitively demonstrated, what environmental imparts can follow such transformations.

And the consequences of these disasters may be multiplied when such emergencies will superimpose existent economical, social and inter-ethnic problems.

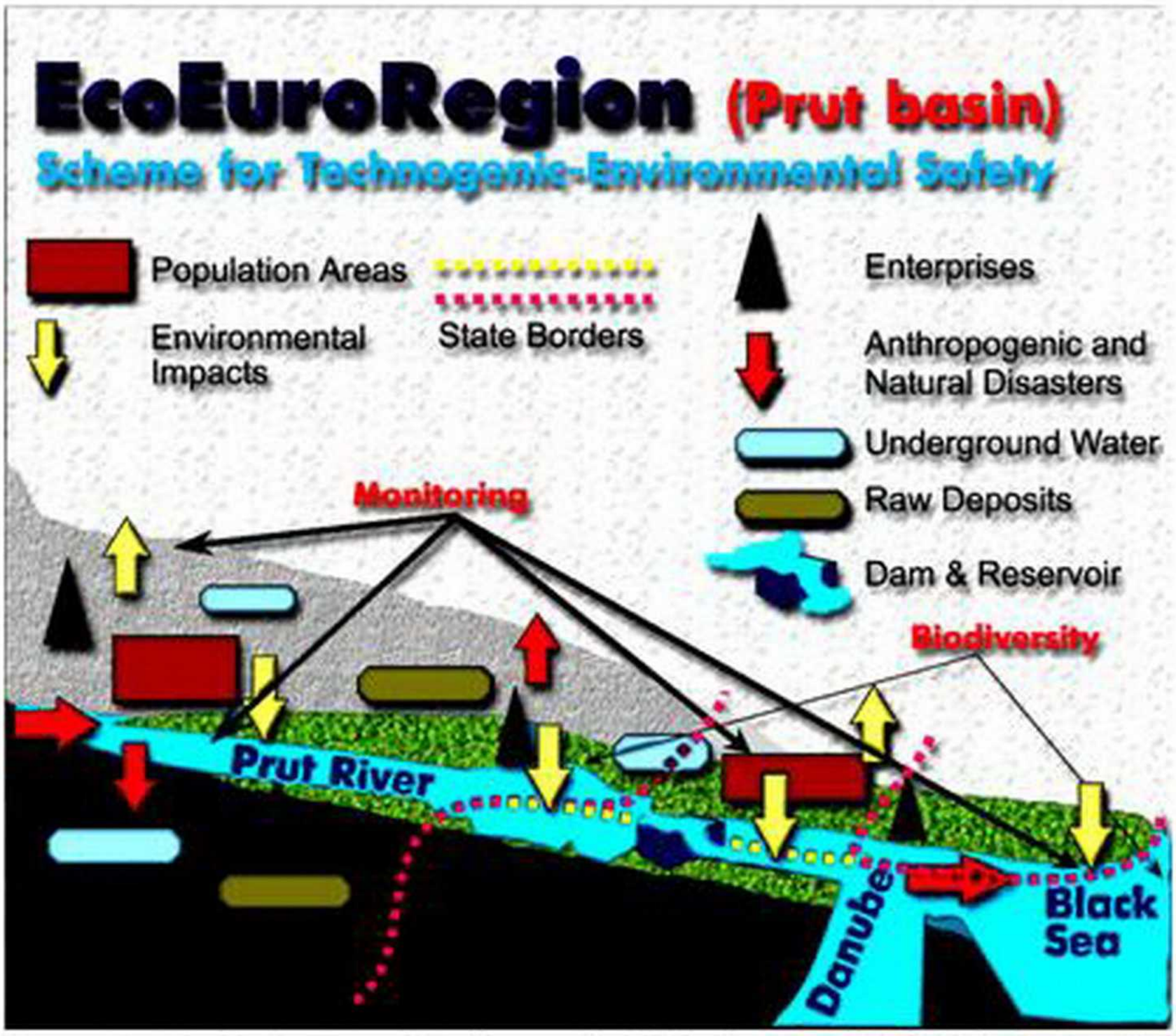


Fig. 1 The principle Scheme on Technogenic & Environmental Safety for border river basin

The preliminary experience of TACIS projects [13-15] demonstrated the opportunity of systems solutions for these issues. General approach of such solutions build on universal tools, which are common in such global modern Programs as "Cleaner Production" of UNIDO/UNEP, "Organic Food" of IFOAM, "Pollution Prevention Act" in USA, ISO 9000:2000 /ISO14000 joint "process approach" and new NIS Standards for the Waste Treatment.

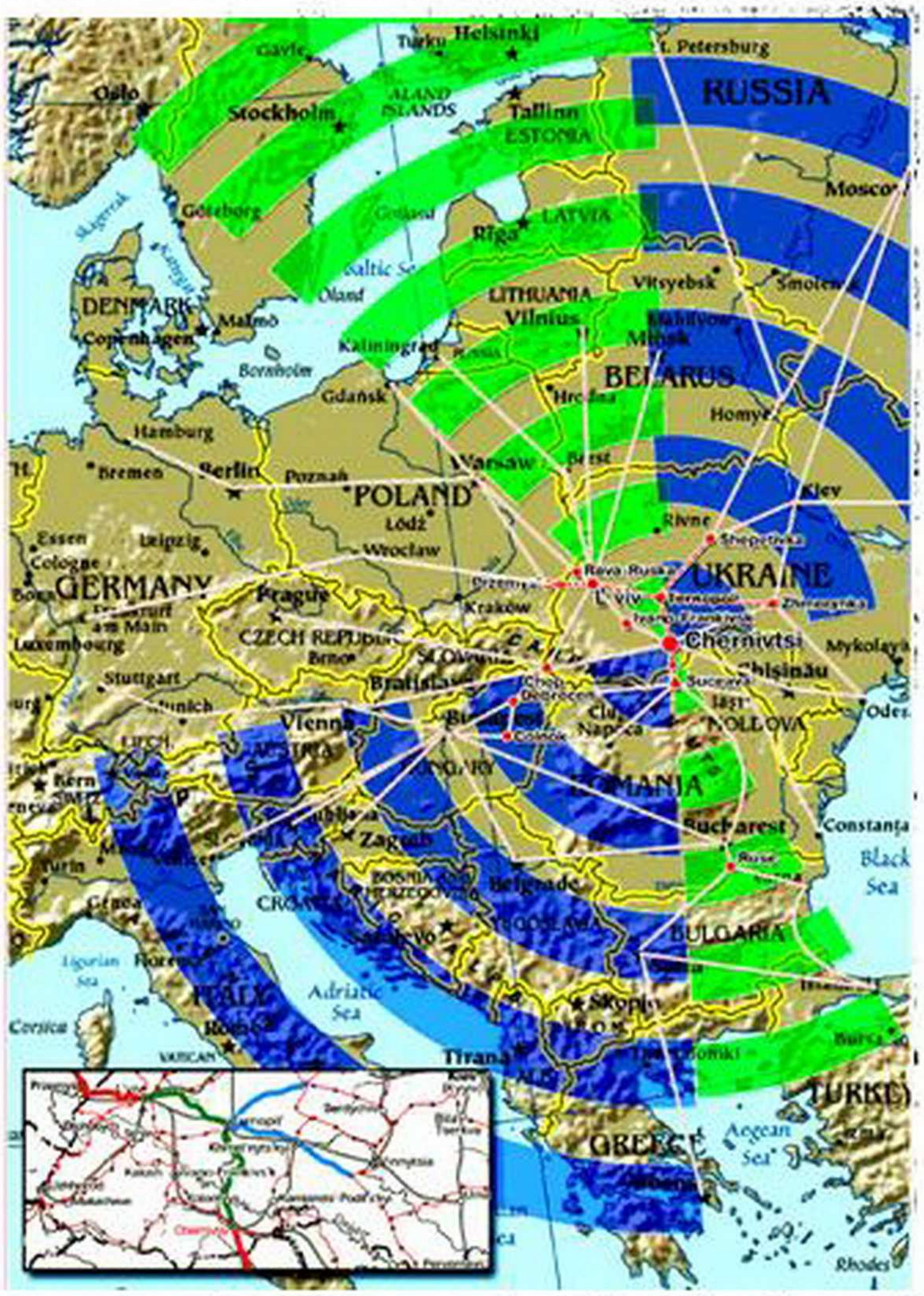
To make the next step it's necessary to demonstrate how common usage of these approaches in TF will heighten the mutual interests of the enterprises & local authorities. For instance it should been provided better Resource & Energy utilisation as well as Waste Management ordering. As a final result such systems solutions will promote Sustainable Spatial Development of the Region [16] and, simultaneously, improve the competitiveness of Economy and increase Techogenic & Environmental Safety, as well as will make this Euroregion more attractive for the EU partnership & investments..

The Scheme on Fig. 2 summarises common methodology for evaluation of regional/local Spatial Potential. In general this potential depends of *a)* own Resources of the Region as well as of *b)* transfer (transit flows) of the Resources (Human, Material, Energy, Financial, Cargo, Information, Cultural, Educational, Tourist etc) through the Region. Both these main sources should be evaluated in nearest neighbouring dimension as well as for far trans-national connections.

In [17] was shown the Analogy between this approach and Electrodynamics Field Equations of Maxwell. These equations exhaustively describe main physical transformations of the space areas in connection with their environment. There also was shown the main objective of this approach — optimisation if the Sum-total (Aggregate) of Technologies (technical, economical, social, information, transportation, medical, security etc), which utilise the above mentioned Resources & Flows in the Region. And the general criteria for this step-by-step optimisation should be the principles of Sustainability & Safety [5]. It's obviously that the implementation of this approach is possible only through modern information technologies based on GIS facility.

Last time such methodology for Technical & Economical transformations was concentrated on the common "process approach" of ISO 9000:2000/ISO 14000. This facility has good perspectives for the multi-level assessment in TF tasks, whereas with the same success it can be used for the unit processes (single operations of production) as well as for evaluation of regional, national and even mega-regional systems.

For instance in [18] was shown the necessity to use such approach to investigate the Energy circulation in the above mentioned spatial areas. This investigation shows the possibilities to survive for such units as well as an optimal way for development under the lack of resources.



The mostly evident example now is the development of transfrontier Gas & Electric networks, which corresponds today both to political situation and at the eve of additional complete at Novodnestrovsk Hydro-Accumulated Station & Khmel'nitskiy Nuclear Power Station. The another example of the utilisation of this approach shown on the Fig. 3. It's obvious [4] that transport systems, which was built by Austrian & Russian Monarchies in XIX centuries, can play now the considerably wider role, then only in the frame of Euroregion "Upper Prut". This Euroregion is situated on the shortest and mostly safe way between Baltic & Mediterranean Seas as well as from Southern-East Europe to East. And this position can give a lot of opportunities for investment & development in different sectors of its Members & Partners Economy. These opportunities were already demonstrated by the development of the Bukowina Land before the World War I.

Fig.3. Potential of old transport corridors along the new EU border as a facility for the incorporation of Ukraine into European Transport Systems

The most significant role can play the model of EcoEuroRegion for the competitiveness of productions & services as well as on their attractiveness for investors. Traditionally high Energy & Resource capacity of all goods & services in post-communist Economy determine

their survival-ability under the real market conditions & prices. The Cleaner Production (Eco-efficiency) approach gives us good opportunity [14] to reveal the "weak" points of the existent technology processes.

To find optimal technical & economical solutions for the enterprises and on the regional level was established general Waste Treatment Scheme (Fig. 4), approved by the Ukrainian (CIS) Standards ДСТУ 2195 (ГОСТ 17.9.0.2-99), ДСТУ 3910-99 (ГОСТ 17.9.1.1-99) & ДСТУ 3911-99 (ГОСТ 17.9.0.1-99). The main objectives are: *a)* to find the eligible treatment technology for any kind of the generated (detected, previously accumulated) waste and *b)* to establish the "information market", which gives an opportunity to find the eligible waste as a raw material (component) for the existent technologies (both for industrial production or especially for waste processing, utilisation or disposal).

RESOURCES	PRODUCTION	COSUMPTION	WASTE TREATMENT
→			

Solid, Liquid and Gaseous

W A S T E S

Raw	Industrial	Municipal

FORECASTING & DETECTION OF THE WASTE GENERATION

PRIMARY ACCOUNTING OF THE WASTE

on the base of the evaluation of Materials & Energy balance of the waste generated processes

WASTE IDENTIFICATION AS SUBSTANCES (MATERIALS)

CLASSIFICATION OF THE IDENTIFIED WASTES

Accordingly to the National Legislation & International Norms

by the indexes of Danger, Resource Value, Ability to be Processed, Utilised, Dispose, Transported, Storage etc

Quotation & Mininisation of Waste Generation	**Waste Certification by the Unified Indexes**

CHOICE OF BEST TECHNOLOGY FOR WASTE TREATMENT

Minimisation, storage, transporting, processing,
Utilisation, disposal (elimination, decontamination)

Change of the cost relationships in the sphere of Waste Treatment at Life Cycle stages of Goods & Services (ISO 14040)

ESTABLISHMENT OF UNIFIED DATA BASES

← **TREATMENT TECHNOLOGIES**	← →	**WASTES**

Fig.4. General Algorithm for Wastes Detection, Accounting, Certification and Information Support under the CIS Waste Treatment Standards ГОСТ 17.9... in common "process approach" of Quality Standards ISO 9000:2000 & Environmental Management Standards ISO 14000 to realise Eco-Efficiency — Cleaner Production principles.

Accordingly to the Appeals of the Council of Euroregion "Upper Prut" to the Presidents & Governments of Ukraine, Romania & Republic of Moldova, they revise now the whole system

of the state & international support for the transfrontier projects as well as the character of the interactions between central & regional authorities in unitary post-communist countries for the above mentioned matter.

For this aim Council of the Euroregion "Upper Prut" approved the List of priority spheres for the linked Economical & Social transfrontier activities & the main mechanisms for interaction in that areas of activity in the Euroregion, which should been realised through the common projects & programs, taking into account the particular status of depressive regions [5, 16].

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