



**IFAR 2008 Professional Development Program
Completion Report
[800 words]**

Instructions:

Please submit the completion report by email, using this form, through the sponsoring CGIAR Center to ifar@ifar4dev.org within three months after the completion of the fellowship.

Please check if Thalwitz Scholarship

Yes

Name of Applicant Oleg Znay

Sponsoring CGIAR Center -----

I. Work Program goals achieved (maximum length: 200 words)

On the basis of analysis of Syrdarya flows were determined parameters: “forty-year” cycles; annual, seasonal, monthly trends; a relationship between hydrologic variability and phases of 11-year cycles of solar activity.

Developed three predicted scenarios of the flow until 2100 year: “base” on the basis of climate norm (1960-1990yy); “moderate” (increase in temperature on 2°C); and “extreme” scenario (increase on 5°C).

Made an assessment of potential vulnerability both the irrigation and natural objects, production energy, with using model NASPI on 4 modes of Toktogul reservoir: irrigation; irrigation-energy and 2 energy.

Defined, that during next 10-12 year of low period will happen: a deterioration of ecological and sanitary conditions; reduction of water area of NAS, Aydarkul; decrease of production of fish and hydroenergy; intensification of the process of land degradation. Will is needed a decrease of lands under technical cultures: Fergana valley 5% - 10%; Middlestream 20% - 40%; Downstream 15% - 30%.

By the end of 21 century, under «moderate» scenario the water resources will increase on 20%, this will require an adjustment of the regime of irrigation, increase of winter wheat areas. Under «extreme » scenario after 2050 year there will decrease of water resources (till 23%), will is needed a search of an alternative sources.

Prepared the adaptation plan includes 6 main positions: management natural resources with allowance for year-long cycles; dispatch control by reservoirs; rehabilitation of drainage and irrigation; “day-to-day” management by demand for water resources; improving of forecasting; development “small” hydroenergetics.

II. Plans for follow-up (maximum length: 200 words)

1) According to results of the study:

- High-level policy briefing paper for the riparian states;
- Discussions with natural resources specialists: Basin Program Overcoming the low period; a creation of “Water Bank” for inter-annual Toktogul reservoir; a creation of United regional water center; a creation of Common Information Field for supply to Decision Support System;
- ISI journal paper.

2) During the low period to continue the analysis of regimes of formation of the river flow for purposes: defining tendencies of decrease of the glacial component; and defining a relationship between hydrologic variability and long-term cycles (22-35-80 years) of solar activity.

3) Development of similar simulation model for Amu Darya basin, where in perspective a water economic situation is even less predicted than in Syr-Darya because:

- climate change can be more extreme;
- share of a glacial flow much more (about 40%);
- is planned a construction two inter-annual reservoirs, which can essentially change existing distribution of transboundary water resources between the riparian states.

4) Research on a substantiation of use of water resources from alternative sources, which can compensate a reduction of own water resources of Aral sea basin in connection with change of regional climate:

- a transfer of part of a flow from other rivers;
- an artificial sedimentation of a precipitation.

III. Report budget utilization including whether budget was spent as planned (maximum length: 100 words)

The budget was used complete, with some adjustment to items.

Items of the budget	Plan	Fact
Personal	6,000	6,000
Data	2,100	2,682
Equipment & supplies	1,800	1,712
Travel & Communication	1,100	606
Total	11,000	11,000

Under the item «Data» it has been spent more financial resources, than it was planned, as in the course of the study was required a depth analysis of one of the basic problems of Syr-Darya basin - « Improving of methods of forecasting of the river and side flows». Also following works have been in addition performed:

- the analysis of influence of solar activity on the river flow;
- data of the river flow, the side flow, reservoir modes and available water supply in Syr-Darya basin for low 2008 are processed and analysed.

Reductions the item «Travel and Communication» has occurred because the requirement for a trip to Kyrgyzstan for collection data has disappeared, because all necessary information have been solved through the Internet and a telephone.

IV. Assessment of the fellowship experience and general comments. (maximum length: 300 words)

Realization of the Program of researches has allowed: to raise my qualification; to expand my knowledge on a problem of influence of global climate change on region natural resources; to prepare a method of construction of perspective hydrological on the basis of long-term cycles of a river flow and observable trends in connection with changes of the regional climate.

Reception of the grant has allowed to continue work on development of model NASPI (NARYN SYRDARYA PLANNING INSTRUMENT), to expand possibilities of the model and to carry out its practical application.

I express great gratitude Thalwitz Scholarship for the grant, which has helped me to strengthen already earlier developed relations with colleagues in republics of the Central Asia, and also to establish new relations to experts in the field of water resources management. Also the grant has allowed me to get a modern computer for performance of the Program and also my further researches on perfection of management by natural resources of Aral sea basin.