Engaging Green Infrastructure Scheme into Watershed- and Urban-based Planning and Design Realms

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Introduction

Watershed planning realm has predominantly been posed by human/urban-centric planning practice solely based on socio-economic dynamics, rather than physical and ecological thresholds at regional level. Thus planning, conservation and management efforts in an individualistic way lack of elaborating natural and cultural landscapes in a holistic way and introducing a monolithic planning and management discourse. This inevitably results in a gap between large scale planning scheme and local plans and, consecutively conservation pursuits both in judicial and administrative spheres remained behind the reach of delivering a comprehensive (conservation) framework.

Based on the aforementioned problematic aspect, the hypothesis that this paper suggests is that existing planning process should accommodate a well-defined green infrastructure (GI) scheme at both watershed and urban realms in order to present regional landscape planning, design and conservation brief.

Method

Holistic, highly flexible and integrated GI scheme was structured on a regional base in Köyceğiz-Dalyan Basin (Fig. 1), which was privileged with Turkey's first 'special environmental protection area' (ÖÇKB) status and, is the world-renowned region with its highly complex natural ecosystems as well as historical places and urban communities (Fig. 2).

To lay out the GI system, the basin was particularly grounded on a well-suited regional and urban matrix consisted of core areas (forests, lake and wetlands, sweet gum populations, agricultural fields, coastal strip along with traditional and tourist communities in Köyceğiz and Dalyan urban contexts) and ecological corridors (alongside river, lake, streams, water channels as well as open-green spaces, boulevards and streets) (Selim, 2015).

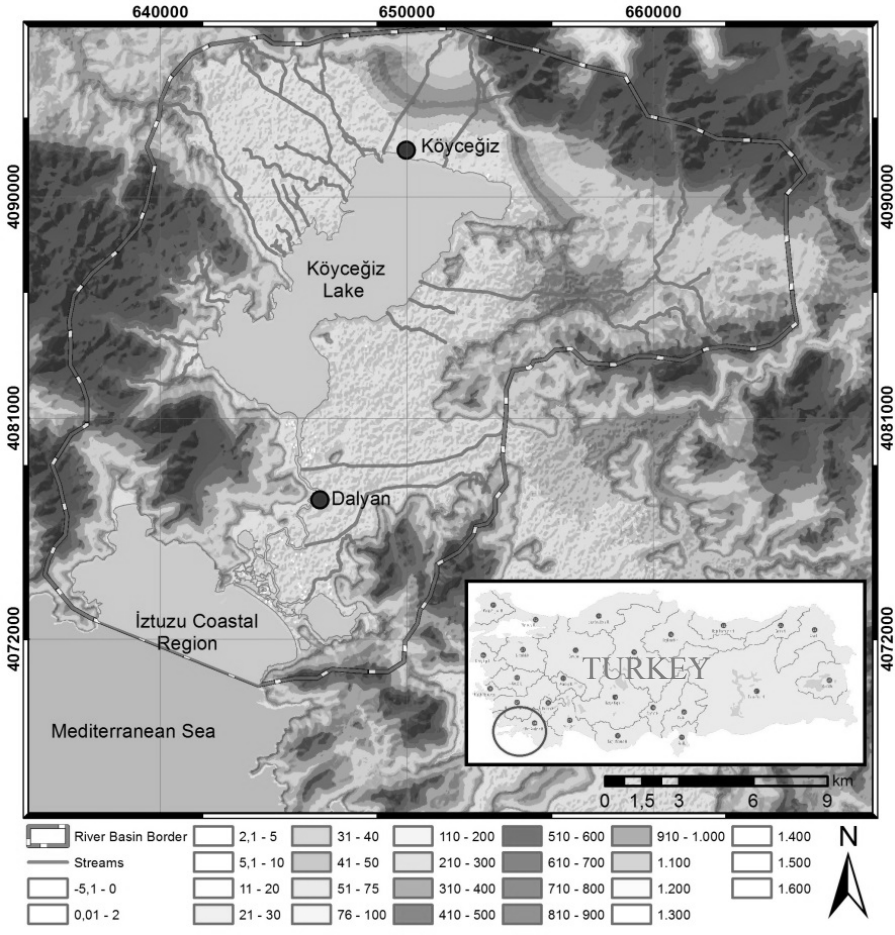

Figure 1. Study area (Köyceğiz-Dalyan Basin, Turkey) (Modified from Selim, 2015)

Engaging with multiple ecological, socio-cultural and economic challenges at varying scales in the region, GI scheme has been developed in order to provide the (sub-) basin sustainability at regional and urban levels. The purview of GI system is pre-emptively incorporated into in a wide range of watershed based planning down into urban (landscape) planning interventions. Provided that enacting the GI scheme within legal planning process and judicial framework would be ensured, it will succinctly re-evaluate and revise ongoing planning process, procedures (including regional and urban development plans) and conservation regime.

Figure 2. Dalyan urban community with a backdrop of natural channels, pools and coastal strip

Results

This section is composed of two interrelated parts:

— The complete GI system, a suite of plans, at regional level (Köyceğiz-Dalyan Basin) and urban level (Köyceğiz and Dalyan urban communities),
— Engagement of GI system into physical planning process and plans

GI system at regional level

In a similar way to the work of Mell (2010), the GI system has been envisaged at regional level (Köyceğiz-Dalyan Basin) interweaving diverse landscape types such as forests (particularly Sweetgum), streams, lakes, wetlands, natural channels, coastal region, agriculture and urban settlements to constitute an integrated and complete (GI) system (Selim, 2015) (Fig. 3).

The rationale of regional GI system is based on identifying landscape types and their association within the basin as depicted in Fig. 4.

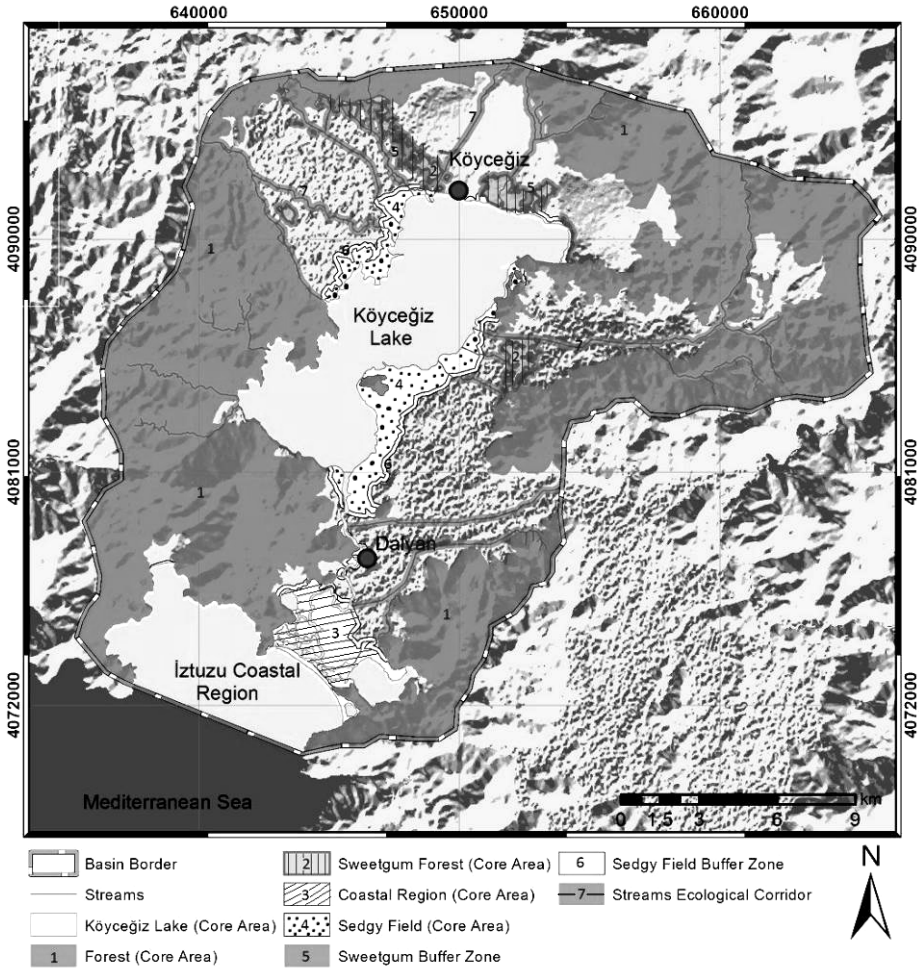

Figure 3. Regional GI scheme at Köyceğiz-Dalyan Basin (Modified from Selim, 2015)

GI system at urban level

Prior to generating an urban GI system, an interface was formed to ensure the transition of regional insights into urban domain. Subsequently, Köyceğiz and Dalyan urban settlements in relation with the basin were undertaken to develop urban GI system. As stated by Dreher and Moore (2012), streets and boulevards, public open spaces (parks, squares etc.) and other social-recreational amenities have been incorporated within urban fabric, provided that the relevancy of urban GI system with the regional context has been established (Fig. 5 and 6).

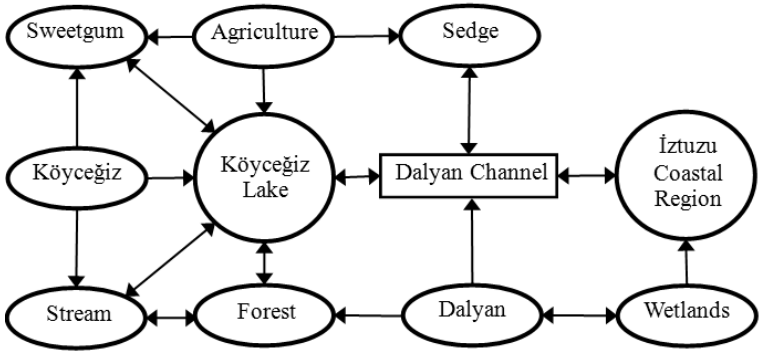

Figure 4. Linkage of natural and cultural landscapes at regional scale (Selim, 2015)

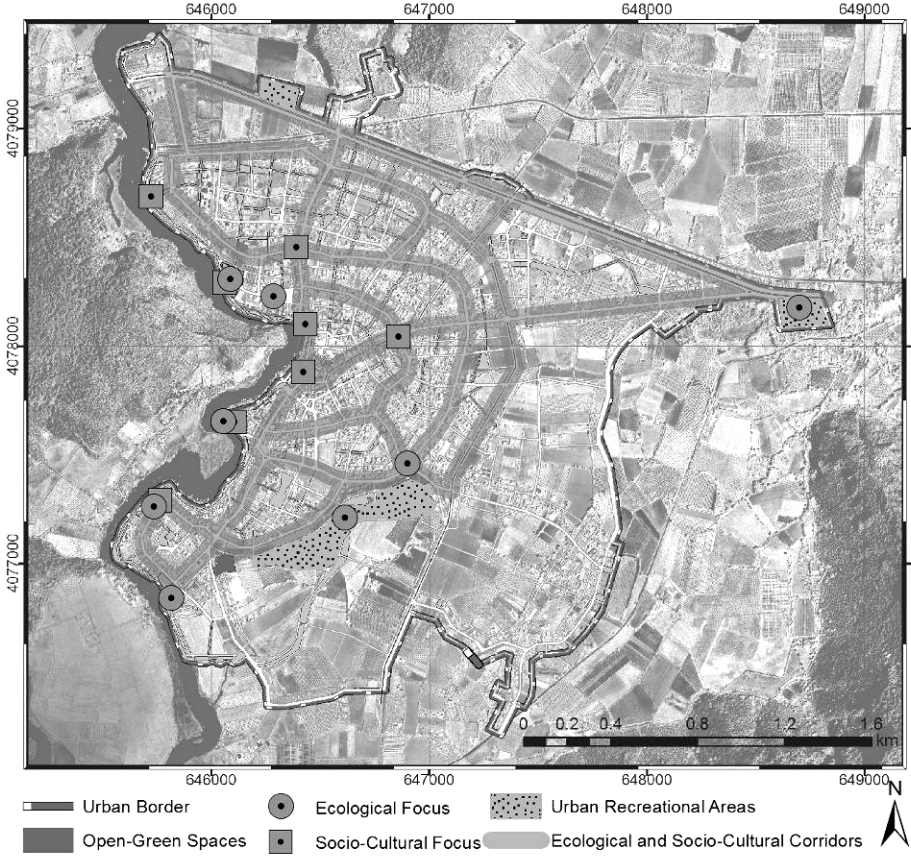

Figure 5. Green infrastructure scheme in Dalyan urban community (Modified from Selim, 2015)

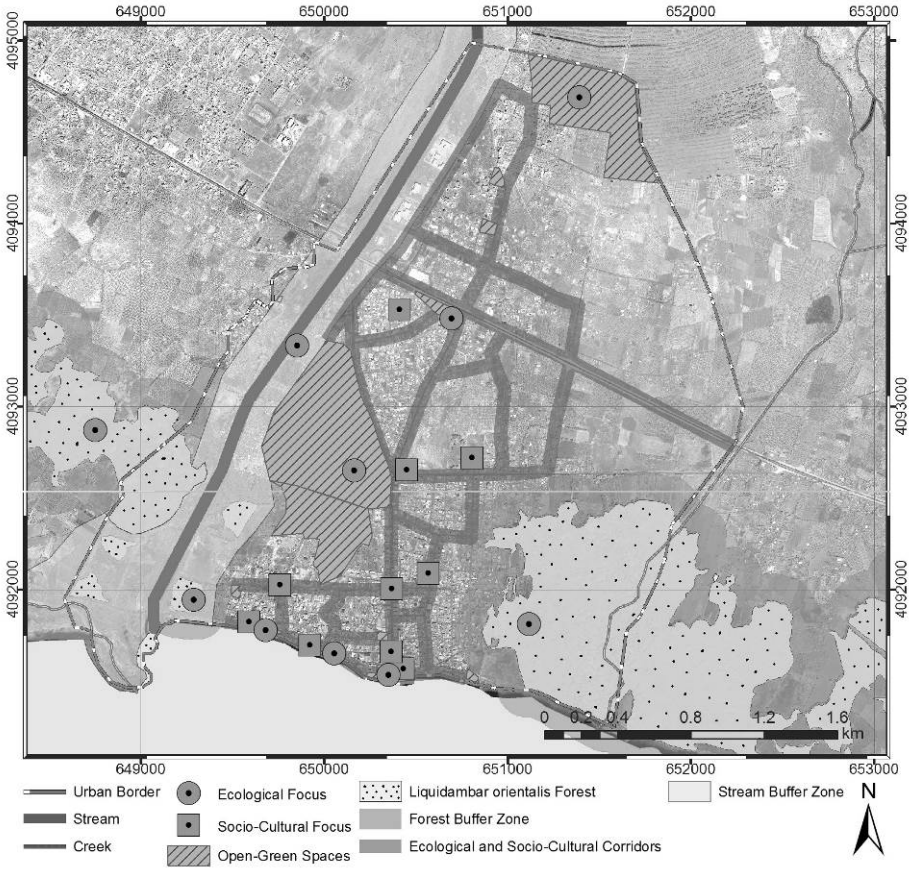

Figure 6. Green infrastructure scheme in Köyceğiz urban community (Modified from Selim, 2015)

Engagement of GI system into physical planning realm

Identification of GI system within the legal planning framework and the judicial landscape is a pre-requisite to ensure its engagement with watershed based planning and management pursuits (incl. watershed management plan, conservation based action plans, regional land use/landscape plan, regional conservation plan) as well as urban master and development plans.

Although GI policy primarily needs to have recognized at national level, its implementation is the subject of regional and local planning and design agenda. So this can quietly prove the necessity of establishing a nexus with regional and urban-wide plans (Fig. 7).

Figure 7. GI plans are being positioned within regional and local spatial planning framework and related public bodies.

As per the Fig. 7, the question remained open is how to place GI system in the context of Köyceğiz-Dalyan Basin. Fig. 8 explicitly illustrates this in judicial, administrative and implementation phases.

At first phase, legal recognition of GI should be endorsed at statuary legislation (in judicial landscape and legal planning process). Regional GI system requested the execution of the Ministry of Environment and Urbanization and the Ministry of Forestry and Water Affairs.

In the implementation phase, municipalities along with other public bodies and institutes should work together under Inter-Agency Coordination. These all call for a legally recognized and thorough (GI) planning hierarchy in "regional - 'region through urban' transition - urban - local" continuum.

Conclusion

The paper has justified that overall GI system is capable of delivering a consistent planning approach against complex and unresolved environmental, social and economic challenges of Köyceğiz-Dalyan Basin through its engagement within regional and urban planning (/design) process and realms.

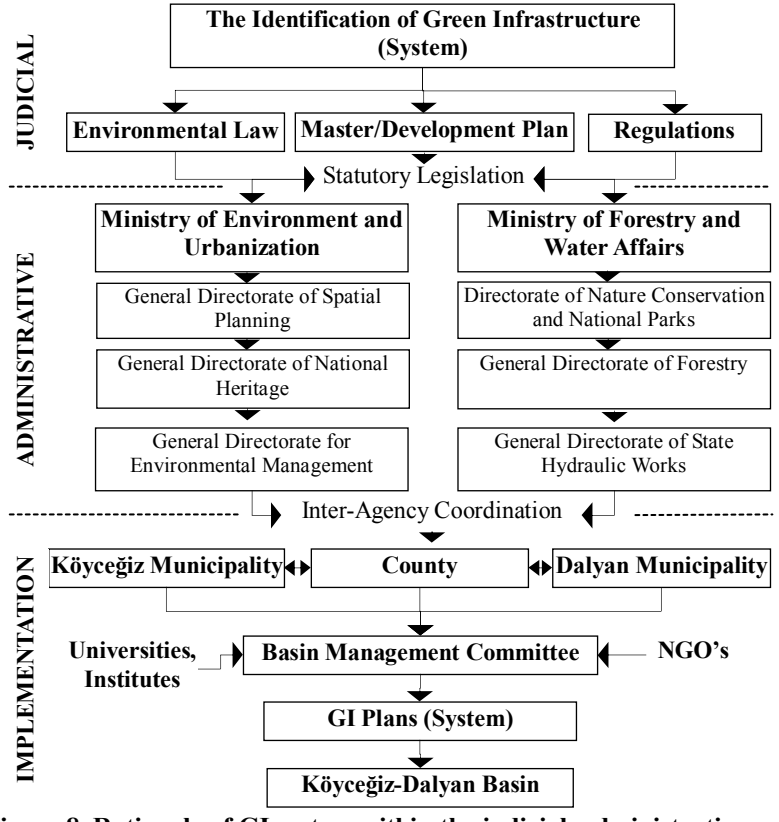

Figure 8. Rationale of GI system within the judicial, administrative and implementation framework at the Basin

References

Dreher, D., Moore, D. (2012). *McHenry County Green Infrastructure Plan.* McHenry County Department of Planning and Development, 53p.

Mell, I.C. (2010). Green Infrastructure: Concepts, Perceptions and Its Use in Spatial Planning *(unpublished PhD thesis)*. School of Architecture Planning and Landscape, Newcastle University, UK, 291p.

Selim, S. (2015). Planning Scheme of Köyceğiz-Dalyan Basin in the Context of Green Infrastructure *(unpublished PhD thesis)*. Ege University Institute of Natural and Applied Sciences Landscape Architecture Program, İzmir, Türkiye (Turkey), 141p.