**SOUTHEAST ASIA**
**START**
global change SysTem for Analysis, Research & Training
**REGIONAL CENTER**

# Final Report on the Partnership between South East Asia START Regional Center – United Nations Environment Programme on the Implementation of the IW:LEARN Project Phase 3

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# Table of Contents

## Acronyms

| | |
|---|---|
| **ADB** | Asian Development Bank |
| **CMS** | Content Management System |
| **CoP** | Community of Practice |
| **GEF** | Global Environment Facility |
| **GIS** | Geographical Information System |
| **IUCN** | International Union for Conservation of Nature |
| **ICT** | Information and Communications Technology |
| **IWC** | International Waters Conference (IWC) |
| **MTE** | Mid-Term Evaluation |
| **PCA** | Project Cooperation Agreement |
| **PCU** | Project Coordination Unit |
| **PRA** | Portfolio Results Archive |
| **SEA START RC** | Southeast Asia *Global Change SysTem for Analysis, Research and Training* (START) Regional Center |
| **SSFA** | Small-Scale Funding Agreement |
| **TDA/SAP** | Transboundary Diagnostic Analysis/Strategic Action Plan (or Programme) |
| **TE** | Terminal Evaluation |
| **UNDP** | United Nations Development Programme |
| **UNEP DEWA** | United Nations Environment Programme, Division of Early Warning and Assessment |
| **UN-IGRAC** | International Groundwater Resources Assessment Centre |
| **UNESCO-IHE** | United Nations Educational, Scientific and Cultural Organization, Institution for Water Education |
| **UNESCO-IHP** | United Nations Educational, Scientific and Cultural Organization, International Hydrological Programme |
| **UNU-INWEH** | United Nations University Institute of Water, Environment and Health |

## 1. Introduction

In 1997, the Global Environment Facility (GEF) initiated the International Waters: Learning Exchange and Resource Network (IW:LEARN) as a knowledge management project to enhance the delivery of results by GEF IW projects. In IW:LEARN Phase 1 and 2 demonstrated different learning methodologies and processes that have engaged various portfolios in such experience sharing.

Information technology has been identified in the third phase of IW:LEARN as one of the bases for improving management decisions on complex environmental problems and often, in providing an opportunity for involving countries' scientific, academic and research communities, including stakeholders in projects so that needed changes in sectoral activities can be made. The use of computer-based information systems and networking among stakeholders and government organizations can foster broad involvement in the planning and implementation of international waters projects and should help to improve the quality, public awareness, and scientific basis of international waters projects. Technological innovations promote transparency among cooperating nations regarding key information, encourage broader participation by stakeholder groups within country and across countries, and provide a basis for evaluation.

Within the GEF IW projects, UNEP delivers both information on the environmental status of global waters and manages knowledge transfer services. UNEP is responsible for the implementation of Components 3 and 4 of the third phase of IW:LEARN, which involves the organization of an IW:Science Conference (Component 3) and designing of an information management and communication platform to support ecosystem management and more informed policy making (Component 4). The two components aim at improving information and communication flow and management practices through face-to-face encounters and enhancement and expansion of Internet-based tools and technology utilized by both GEF IW:LEARN and the GEF IW project portfolio.

Under Component 4, United Nations Environment Programme (UNEP) focused on consolidation of the infrastructure set up under the previous phase of IW:LEARN, and that which has been developed under the IW:Science Project, hence, increasing the efficiency and effectiveness of services provided. The knowledge management platform will be enhanced to create new opportunities to mobilize and share knowledge across the IW portfolio project. The scope combines the various elements of the programme more efficiently in terms of organization, definition of roles and accountabilities while taking a unified approach to Information and Communication Technology (ICT). This involves people, processes and platforms such as iwlearn.net.

Demands from projects are changing and technological innovation has provided new opportunities for increased facilitation of information sharing and mutual learning. In a few areas, new approaches will be tested and a flexible governance structure is proposed to allow for adaptive management of Component 4 as needed for changes of the portfolio and as new technical possibilities arise.

UNEP leveraged its comprehensive framework for the implementation of Water Policy and Strategy and the emerging information technology to facilitate greater stakeholder learning,

transparency and participation within the IW portfolio. The two components will help meet the continued need for assisting IW projects in acquiring relevant knowledge related to transboundary waters management. It will enhance the understanding and application of GEF IW experiences across the portfolio and beyond, and facilitate the replication and up-scaling of good practices.

Since 2004, the Southeast Asia *Global Change System for Analysis, Research and Training* Regional Center (SEA START RC) has been a key partner of UNEP, as represented by its Division of Early Warning Assessment (DEWA), in implementing the IW:LEARN Project.

SEA START RC is one of the eight (8) regional nodes for the Southeast Asia Regional Committee for START (SARCS) through which activities of the Global Change System for Analysis, Research and Training (START; http://start.org) network for the region are coursed through. SEA START RC was established in 1996 as a joint center of international research and capacity building on climate change scenarios, impacts, vulnerability and adaptation on various systems and sectors; atmospheric research; marine and coastal management studies; and environmental data and information services.

SEA START's role as a partner in the IW:LEARN Project was to support the data and information sharing component, in close coordination with UNEP DEWA Nairobi office, focusing on: (1) project management; (2) development and management of the GEF IW project portal - www.iwlearn.net - which serves as the knowledge base for GEF IW:LEARN and contains an extensive collection of resources, experiences, and materials for the portfolio; (3) design and implementation of content management systems (CMS) using Plone Open Source software; (4) regional ICT capacity building workshops and technical support for GEF projects and partners; (5) Implementation of Web Geographical Information System (GIS) using an Open Source platform; and (6) outreach including publishing of a monthly newsletter (IW:LEARN E-Bulletin) to over 2000 water resource practitioners worldwide.

In May 2011, UNEP and SEA START renewed their partnership for the joint implementation of the IW:LEARN Project Phase 3 (IW:LEARN3) Component 4 for the next four (4) years (2011-2014).

## 2. Project Organization

IW:LEARN3 was jointly implemented by UNDP and UNEP, whose project staff, including consultants from SEA START RC, formed part of the Project Coordination Unit (PCU) responsible for the day-to-day operation and management of the project. Component 4 was supervised and headed by a senior Programme Officer at UNEP DEWA Nairobi Office, and was coordinated and managed daily by a Project Manager employed by SEA START RC and supported by a Technical Assistant (UNEP DEWA Nairobi Office), IT Specialist (SEA START RC), Web Developer (SEA START RC), Administrative and Communication Officer (SEA START RC). The overall IW:LEARN Project planning and implementation of activities were coordinated by the UNDP Project Manager (UNDP IW:LEARN Project Manager) while decisions were made at the Project Steering Committee level, which consisted of the GEF Secretariat and partner organizations.

A Small Scale Funding Agreement (SSFA) and Project Cooperation Agreement (PCA) between UNEP and SEA START RC outlined the scope including activities, schedule and budget allocation with respect to the implementation of Component 4.

## 3. Budget Arrangements and Administrative Report

UNEP provided a total of USD701500.00 to SEA START RC for 48-month implementation of Component 4.

The disbursement of funds took place as follows (in USD):
Year 1: 1 May 2011 to 30 April 2012                 180,500.00
Year 2: 1 May 2012 to 30 April 2013                 200,000.00
Year 3: 1 May 2013 to 30 April 2014                 190,000.00
Year 4: 1 May 2014 to 31 October 2014                 96,000.00
Extension: 1 November 2014 to 30 April 2015         35,000.00

Table 1. Summary of financial activities (in USD)

| Period | Funds | Expenditures | Gain/(Loss) on exchange rate | Bank interest | Outstanding balance |
|---|---|---|---|---|---|
| Year 1 (SSFA) | 180,500.00 | 179,211.39 | (39.24) | 0 | 1249.37 |
| Year 2 (SSFA) | 200,000.00 | 209,957.92 | (369.48) | 0 | (10,327.40) |
| Year 3 (PCA) | 190,000.00 | 190,046.98 | 13,816.58 | 72.10 | 13,841.70 |
| Year 4 (PCA) | 96,000.00 | 75,825.45 | (68.14) | 11.63 | 20,118.04 |
| Extension (PCA) | 35,000.00 | 59,484.40 | (414.70) | 17.39 | (24,881.71) |
| TOTAL | 701,500.00 | 714,526.14 | 12,925.02 | 101.12 | 0.00 |

SEA START RC provided co-financing to the project at an estimated amount of USD 36 000.00 per year or a total of USD 144 000.00 for four years. Additionally, SEA START RC was also able to get co-financing for the ICT Workshops held in Delft, Netherlands and Manila, Philippines from the United Nations Educational, Scientific and Cultural Organization, Institution for Water Education (UNESCO-IHE) and Asian Development Bank (ADB) respectively amounting to USD 15 000.

Annual independent, external financial audit and reporting were carried out reflecting responsible use of the funds for the sole purpose of IW:LEARN Component 4. In fact, Year 3 external audit reported a gain totaling to USD 13 816.58 (as of 30 April forex rate) resulting from SEA START RC project team's keen attention to the fluctuating USD to ThB exchange rate and strategic use of the stronger currency, either Thai Baht or USD, to pay expenditures. The amount gained has helped extend the lifespan of the project together with the additional funding from UNEP.

## 4. Project Outputs

SEA START RC, together with UNEP DEWA, has implemented seventeen (17) activities leading to the realization of seven (7) result outputs as outlined in the SSFA and PCA.

The details on extent of achievement of outputs are discussed below.

Table 2. Summary of activity implementation by year.

| Activity | Y1 | Y2 | Y3 | Y4 |
|---|---|---|---|---|
| 1. Hosting of project toolkit websites and communities of practice | ▓ | ▓ | ▓ | ▓ |
| 2. Back-ups of data | ▓ | ▓ | ▓ | ▓ |
| 3. Archiving of project websites and data | ▓ | ▓ | ▓ | ▓ |
| 4. Capture of spatial data and results emanating from the projects | ▓ | ▓ | ▓ | ▓ |
| 5. Capture content relevant to component 4 | ▓ | ▓ | ▓ | ▓ |
| 6. Publish e-bulletin | ▓ | ▓ | ▓ | ▓ |
| 7. Prepare promotional materials | ▓ | ▓ | ▓ | ▓ |
| 8. Analyze, update and archive materials from all IW projects to date | ▓ | ▓ | ▓ | ▓ |
| 9. Stakeholders consultations on needs for project information access and sharing and needs for CoP | ▓ | | | |
| 10. Prepare manuals for users and administrators and CoP moderators | ▓ | ▓ | ▓ | ▓ |
| 11. Identify relevant 'water' portals and implement functionalities for accessing via www. iwlearn. net | ▓ | ▓ | ▓ | ▓ |
| 12. Develop standard procedures and rules for content flow | ▓ | ▓ | ▓ | ▓ |
| 13. Evaluate common metadata standards, vocabularies, data exchange mechanisms including open access and open archives. | ▓ | ▓ | ▓ | ▓ |
| 14. Support various kinds of CoPs within IW:LEARN 3 | ▓ | ▓ | ▓ | ▓ |
| 15. ICT helpdesk/respond to stakeholders' ICT questions | ▓ | ▓ | ▓ | ▓ |
| 16. Develop and design new toolkit websites for new IW projects | ▓ | ▓ | ▓ | ▓ |
| 17. Train/support to website implementation including how to produce and publish web content | ▓ | ▓ | ▓ | ▓ |

## 4.1 Output 1: IW:LEARN Web Platform with user-driven and user-friendly functionality for regional and thematic Communities of Practice (CoPs) and individual project toolkit websites

Since the website's upgrading to Plone 4 (from Plone 2.5) in November 2010 (Fig. 1), http://iwlearn.net, the main knowledge management platform of the project and the GEF IW portfolio has undergone major evolution both at its back end and front end aspects. The website became four times faster than its previous version, the CMS interface included an intuitive visual editing which aided team members with less IT skills better than before and made it easier for them to manage user and groups, among other CMS enhancements (Fig. 2).

To comply with the requirements set out in the project document, and in response to feature requests from partners and key users, SEA START RC led the UNEP-SEA START PCU in accomplishing the following[1]: (1) launch of multimedia center including a separate photo and a

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[1] The technical details for the IWLEARN.NET features and modules are described further in Annex 1.

video gallery that is highlighted as a portlet at the homepage; (2) creation of a responsive, fluid design that is mobile-friendly; (3) improved project database with a more dynamic project profile layout and additional tabs for accessing project maps and results as available, as well as portfolio-level visualization; (4) created the Communities of Practice section; (5) provided Manuals section containing reference guide for project managers and guidebooks on the TDA/SAP methodology, Public Private Partnerships,and Mainstreaming Climate Change and Variability;(6) added UN Water Platforms section; (7) included the *ShareThis* social media buttons that allow easy sharing and broadcasting of any IW:LEARN webpage to Twitter, Facebook, LinkedIn, email; (8) made view events by list, calendar and by location; (9) GoogleTranslate the website into any of the 90 languages available; (10) updated Website Guidelines; (11) updated project website archives; (12) updated sections for the GEF International Waters Conference (IWC) 6 and 7 and the GEF IW Science Conference 2012, including online registrations and surveys; (13) updated contact database of practitioners and organizations; (14) a cleanup of metadata for project documents.

An independent website review was conducted by Zentraal, Inc., an Open Source software company based in the USA, between April to July 2013. UNEP and SEA START made the review possible, despite its non-inclusion in Phase 3, in positive response to the request during the January 2013 Geneva Steering Committee meeting's discussion on the Mid-Term Evaluation report, to identify and consolidate the website issues encountered by the target users (managers and staff from the key agencies and projects), and map out possible solutions (Fig. 5). It is important to note that the review involved interviews with selected managers, where only 9 out of 21 managers invited responded to the request. Furthermore, the team also acted on some recommendations for iwlearn.net in the Terminal Evaluation particularly on the aesthetic and navigational aspects by adjusting the layout of the homepage and other webpages (Fig.3), and by proposing new designs studies for IWLEARN.NET (Fig. 4).

One of the major challenges in enhancing iwlearn.net in Phase 3 was the lack of a solid direction to take, perhaps because of a lack of strong will or perhaps motivation from indirectly involved stakeholders (e.g., managers who are mostly busy implementing their own project activities and websites) to participate in survey and research, and/or not everyone being on the same wavelength when it comes to their preferences for a website, as reflected in the contradictory recommendations from Zentraal web review, MTE and TE, which has led to confusing or generalized user requirements, additional technical workload, and eventually, continued dissatisfaction among users.

As a result, in March 2015, the team helped UNEP conduct a final survey among partners and put together a User Specification document intended to help the partners in preparing the next phase of the IW:LEARN Project, to agree on a set of priority features for the next version of IWLEARN.NET, and that the budget and activities are efficiently planned based on the user specification.

Figure 1. iwlearn.net user interface (UI) design by start of IW:LEARN3, carried over from Phase 2.
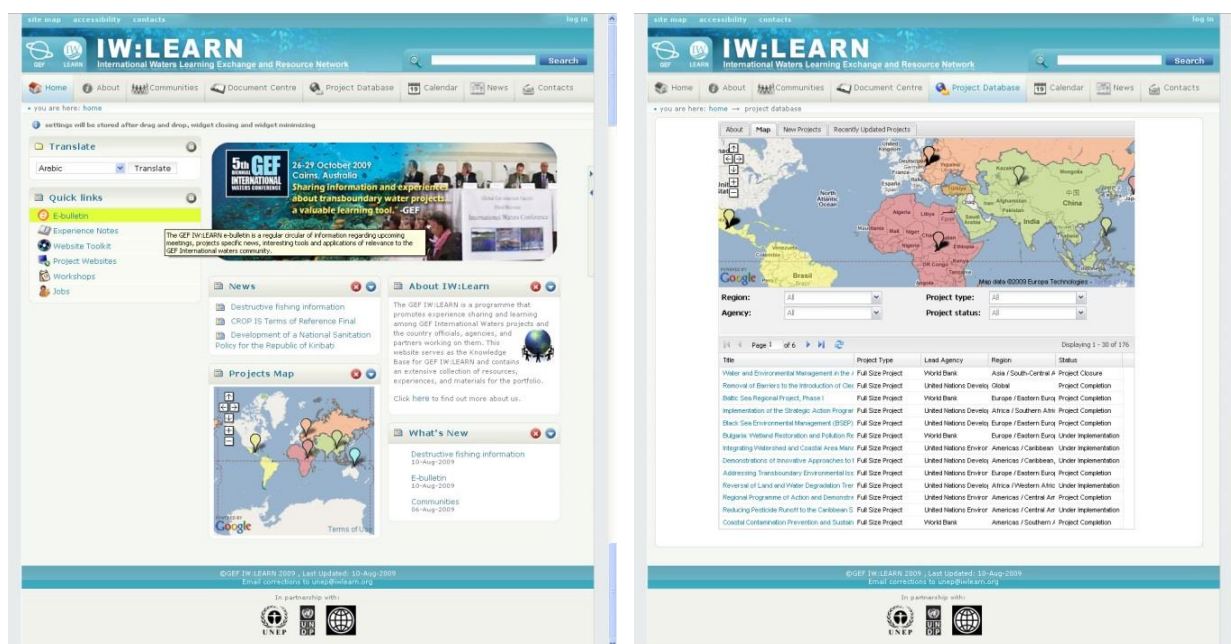


Figure 2. iwlearn.net user interface (UI) as of 2012, Year 1 of IW:LEARN3. The design was made responsive and mobile-friendly, which improved user experience and content navigability.

Figure 3. iwlearn.net user UI design as of 2015. Modifications were made since July 2013 to reflect some of the recommendations from Zentraal's external website review, and Mid-Term and Terminal evaluations.



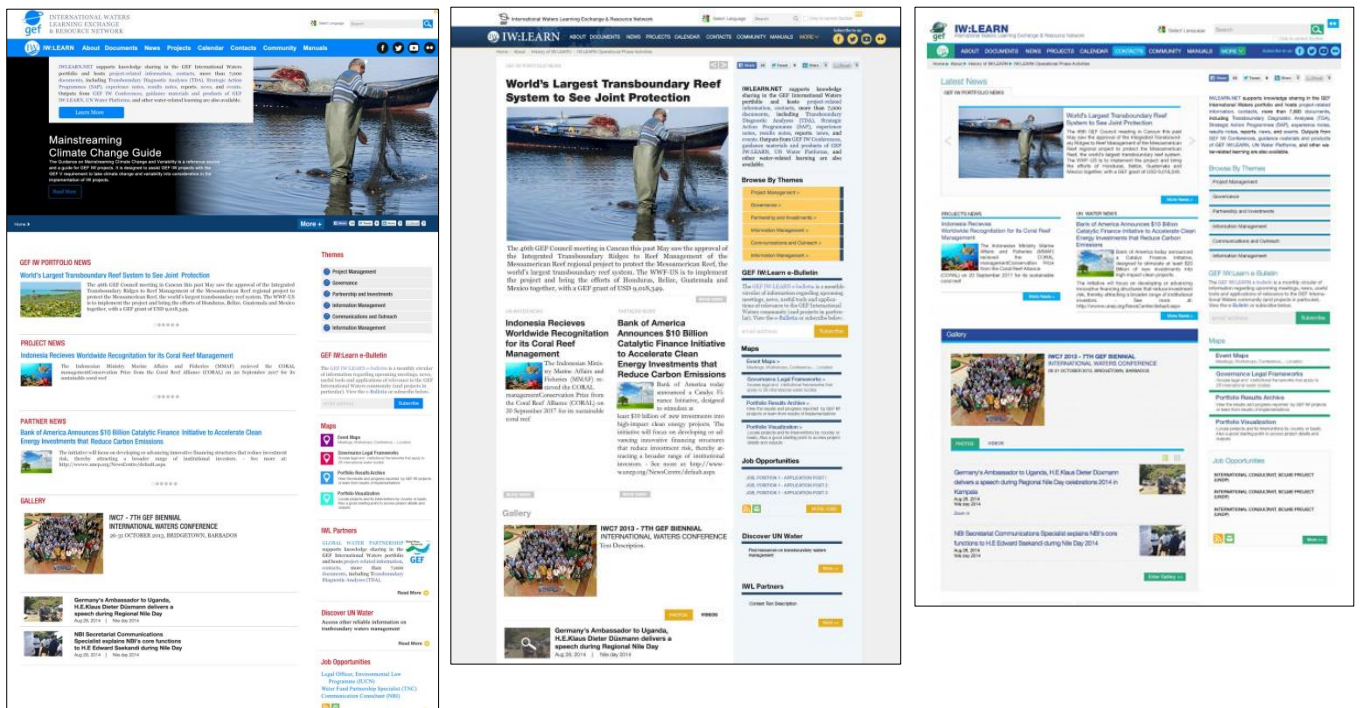Figure 4. New design proposals which presented in November 2014 Washington DC IW:LEARN Partners Meeting.
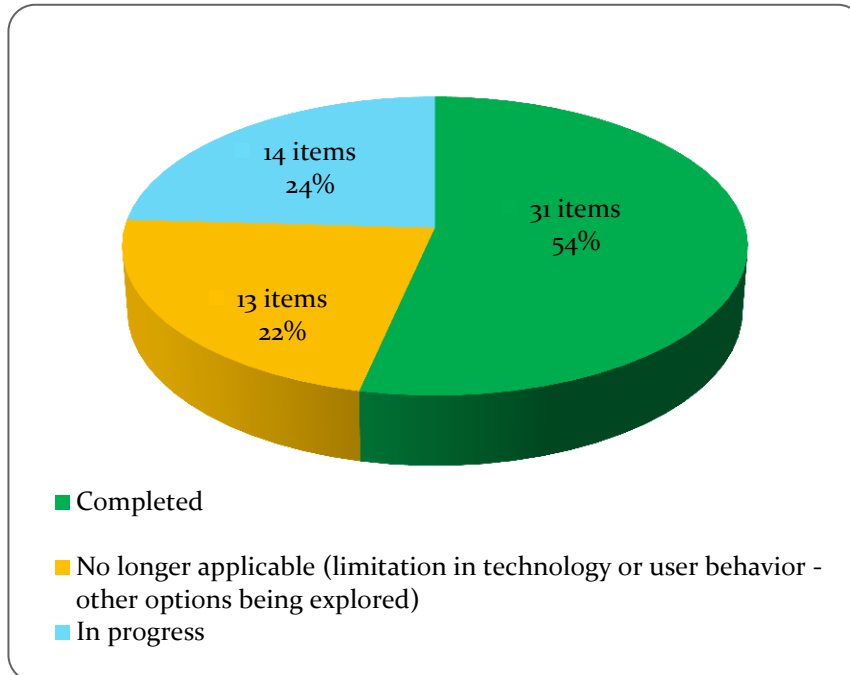
- **Completed**
- **No longer applicable (limitation in technology or user behavior - other options being explored)**
- **In progress**

## 4.2   Output 2: Portfolio Visualization Tools

The Visualization Tool (http://iwlearn.net/visualization) produced in Phase 3 has two main parts[2] – one presents the entire GEF IW portfolio, also referred to as Portfolio Visualization,while the other part addresses project level datasets and allows flexibility to customize visualization based on specific project needs and using a variety of datasets, through the open-source Geonode platform.

The main Portfolio Visualization page (http://iwlearn.net/iwprojectsmap) contains a global map on which viewers can overlay selected layers to display the impacts and interventions of the GEF IW portfolio. It shows portfolio level impacts and project locations (Fig. 6).

The Governance Legal Framework map (http://iwlearn.net/legalframeworks) was based on the report published in 2011 which discusses the legal and institutional frameworks that apply to twenty-eight (28) international water bodies that were identified as part of the UNDP-GEF "Good Practices and Portfolio Learning in GEF Transboundary Freshwater and Marine Legal and Institutional Frameworks" project. The analysis in this report is organized by a common set of eighteen (18) criteria and is intended to provide information that can be used to support further research and analysis, with the ultimate goal of identifying a set of common elements of good governance for transboundary freshwater and marine water bodies as well as groundwater systems.

On the other hand, the Portfolio Results Archive (PRA) map (http://iwlearn.net/pramap) showcases the results and progress mainly reported by the projects on basic indicators set out in the GEF IW Tracking Tool (Fig.7). The main source of data for the PRA is the GEF IW Tracking

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[2] The technical details for the Visualization Tools are described further in Annex 1.

Tool, which is designed to support GEF's approach to Results-Based Management, and takes into account all indicators in the GEF IW Focal Area Strategy, namely: process, stress reduction, and environmental/water resources and socioeconomic status indicators. Secondary sources are relevant documents periodically submitted by projects such as the IW Results Notes, which may vary in quality, format and also response rate, but which contain significant details of project results and lessons learned.

At the Portfolio map, users can select a base map and one or a combination of overlays such as ecosystem type, GEF Agency, Project Status, with/without project). When a user clicks on a pin or boundary, either a list of project titles or a project title with a description of the project is displayed onscreen. The complete project title and a description with a link to in-depth details will also be displayed just below the map on the same page. Transboundary water basins are categorized into: (a) Open Oceans, (b) Large marine ecosystems (LMES), (c) Lakes, (d) Rivers, and (e) Aquifers. The tool shows basins either with or without GEF intervention. The Portfolio Visualization also shows the distribution of projects by partnering countries showing countries with FEW vs. MANY projects. The PRA works similarly, but it uses GEF Tracking Tool indicators as filter selection, while the Legal Framework map displays legal agreements by country.

The Portfolio map has been used in GEF publications and presentations such as *From Community to Cabinet.*

Figure 6. Screenshots of the Portfolio map displaying the GEF IW Project Management Office locations worldwide (left) and the Legal Framework map.
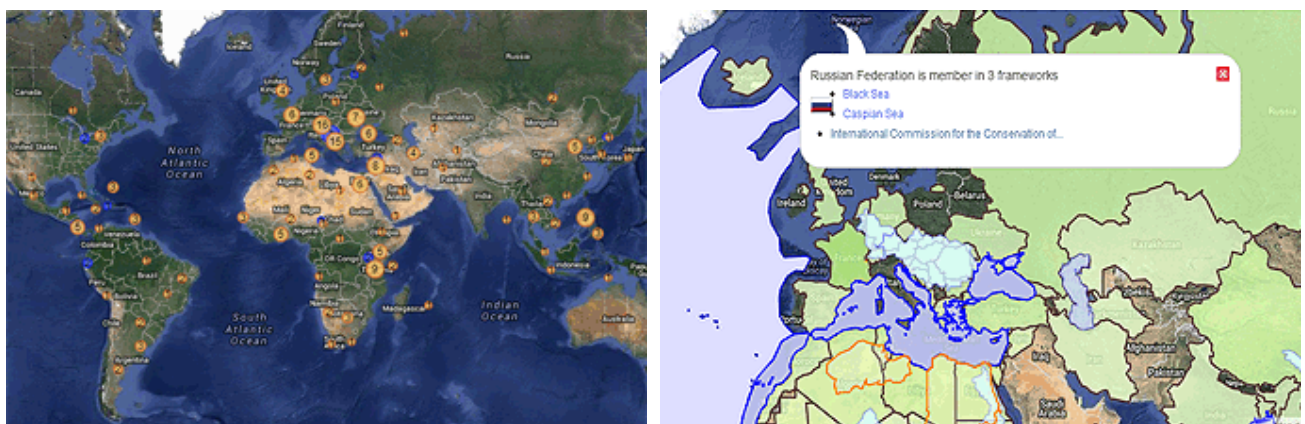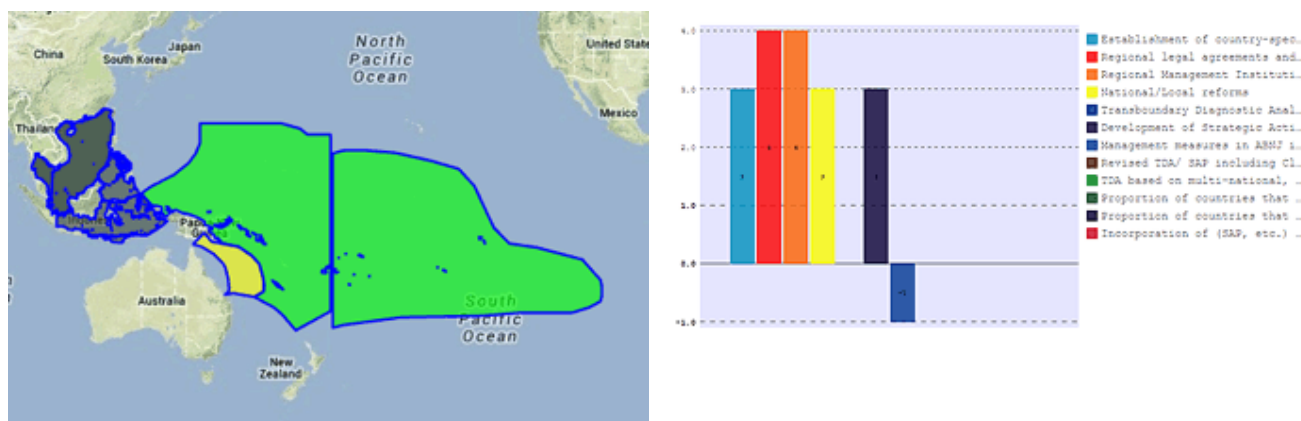
Figure 7. Screenshots showing the PRA map (http://iwlearn.net/pramap) and a statistical presentation of a GEF IW project rating (e.g., http://iwlearn.net/iw-projects/2700/@@resultsview.html)



A supplemental online GIS service was also launched in 2013 by the PCU to enable projects with no or limited capacity to publish spatial data through an open source platform called Geonode. Geonode is a customizable Open Source web mapping tool which allows users to browse and share geospatial data, and to explore maps from existing content or upload and create maps from new content.

Through Geonode, the GEF IW projects and partner organizations can publish and easily share geodata and maps online through the IW:LEARN server, and generate custom maps for embedding in their own website, regardless of the online platform being used (Fig. 8). A total of three hundred ninety-three (393) layers from projects and other source are currently hosted in http://geonode.iwlearn.org, with new layers and maps continuously being uploaded by the Baikal Basin Project.

Figure 8. Screenshots of the IW:LEARN Geonode (left) and how layers and maps published in a Geonode website can be reused and republished in another website (among other possibilities) through the protocol Web Map Service (WMS) as done in the DIKTAS Project website.
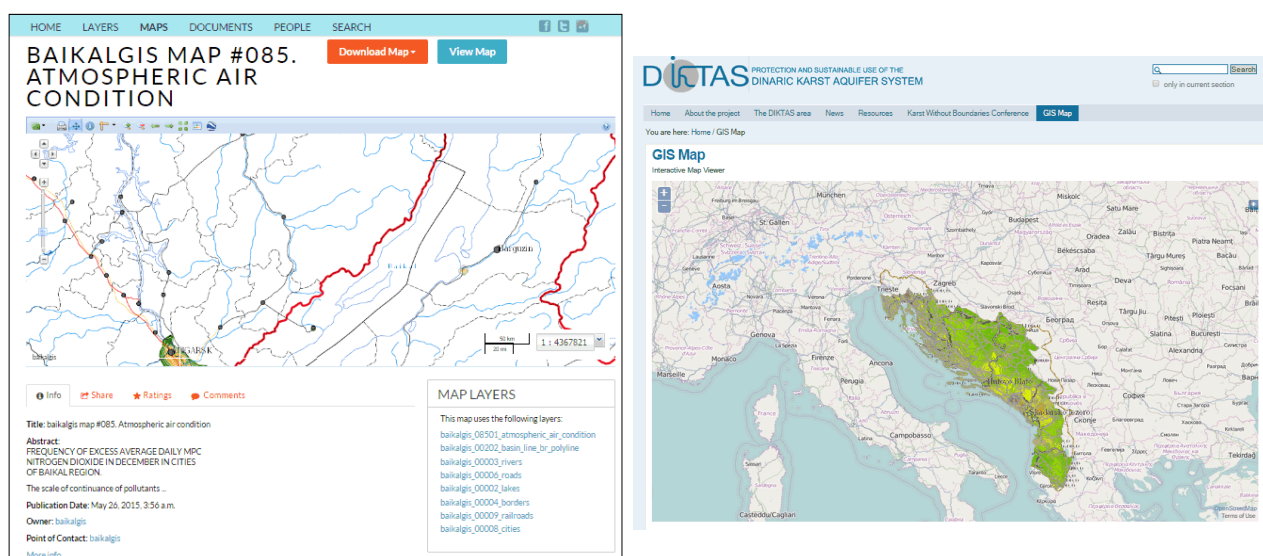


In the beginning, an ad-hoc Visualization Committee was formed to help scope a specification for the tool but eventually, it became inactive as most of the members also had other priorities

in their own organizations. During the IW Science Conference in 2012, a side event was jointly organized by UNEP and UNDP to launch the Visualization Tools and get feedback from the participants. The attendance was small than targeted and little significant feedback was received.

Although very viable platforms (completely open source and open data) were launched by the PCU since its early implementation, the uptake and feedback provided by the intended users were low and slow, similar to the challenges encountered in managing and enhancing IWLEARN.NET.

Furthermore, the technical team had observed that most of the targeted users have insufficient technical GIS understanding to fully appreciate a robust online map and web mapping tool. On the other hand, users appreciate more a visually enticing map even if the map presents only static data (such as in the case of Flash animated maps) that is probably updated only once in three months or longer. The maps that are accessible in IWLEARN.NET, in most cases, show the recent approved data that the team had received. Likewise, as promoter of Open Data, the team provided a way to make the maps reusable through KML downloads at the minimum level.

## 4.3   Output 3: Regular news dissemination including e-updates

A total of thirty-nine (39) e-Bulletin issues were distributed to an increasing number of subscribers (2,652 subscribers as of 30 April 2015). The news mainly centered on projects'activities and results, and water-related issues and milestones published by the GEF and its agencies and other authoritative sources. The e-Bulletin also includes job vacancies, competitions, scholarships and events for the benefit of practitioners. The same news and information are also being disseminated to subscribers on Facebook and Twitter.

SEA START has made a consistent effort to publish a feature article in iwlearn.net and the e-Bulletin to report key points from every ICT workshop and major activities it has implemented on behalf of UNEP.

Feedback and interaction received in terms of '*likes*' and '*retweets*', as well as the increasing number of subscribers, indicate subscribers' overall satisfaction and appreciation of this service (Fig. 9).

Figure 9. Screenshots of the e-Bulletin as received in email (left) and the IW:LEARN Facebook page.
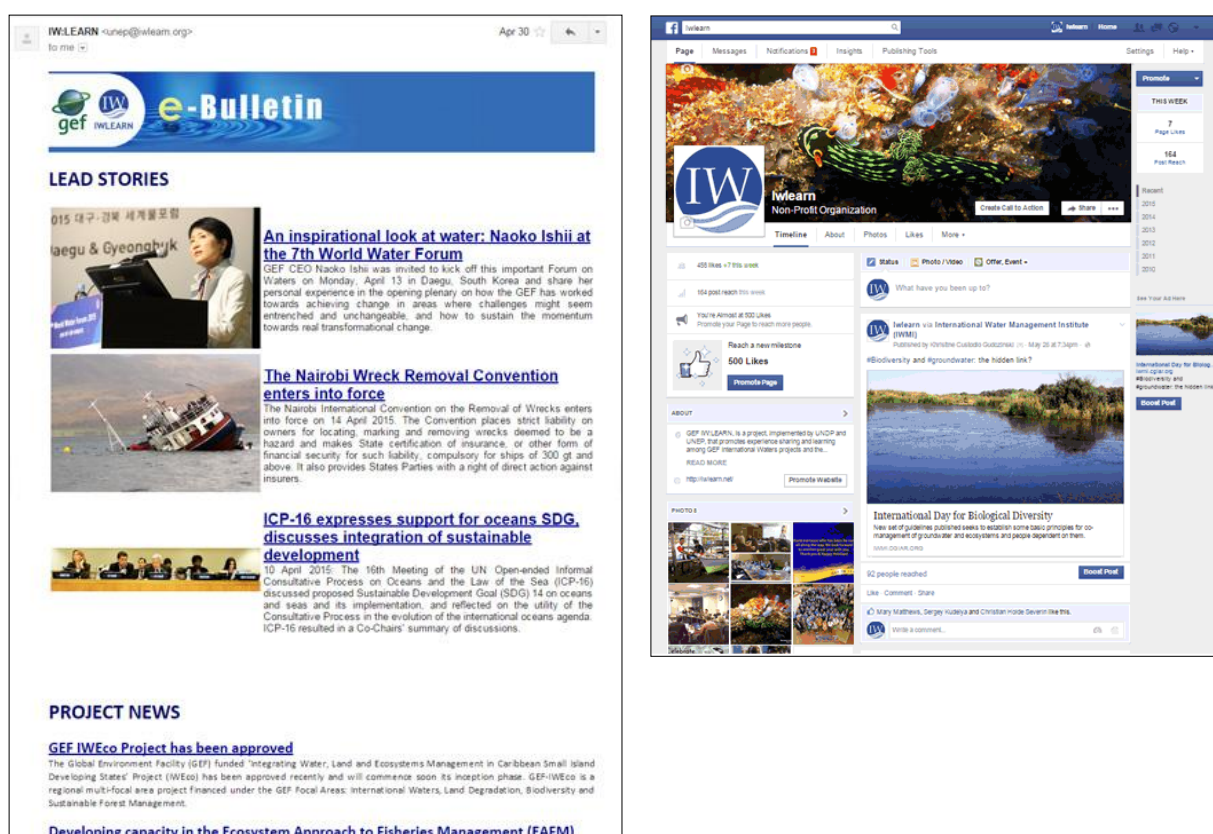


## 4.4 Output 4: Comprehensive searchable catalogue of GEF IW project experiences and results

This component entailed the archiving of project data and results, and the preparation of the Project Results Archive.

Documents and spatial data from projects were harvested from their websites and uploaded to IWLEARN.NET to enhance information flow and sharing within the portfolio. These represented a total of one hundred eight (108) Result Notes; forty (40) Experience Notes; fifty-three (53) Strategic Action Programmes (SAP); sixty-nine (69) Transboundary Diagnostic Analyses (TDA); 368 datasets and map layers; manuals on project management, TDA/SAP methodologies, climate change adaptation, public-private partnership; training courses materials; and many other knowledge products are hosted in IWLEARN.NET.

Moreover, a mirror copy of websites of closed projects or completed their implementation were uploaded to the IW:LEARN server and made accessible in IWLEARN.NET to enable the portfolio to continuously retrieve information from these websites. This ensures that the legacy of the projects and any significant outputs, experiences and lessons learned will not be lost. During Phase 3, a total of sixty (60) project websites were archived.

A PRA tool was created and launched in May 2014 to visualize the above data and results from projects at http://iwlearn.net/resultsmap (Please refer to Output 2 for further details). The tool

was intended to provide the GEF and its agencies with a one-stop shop to view what each of the individual projects has accomplished, hence helping the monitoring and evaluation (M&E) process. The PRA tool has not been fully evaluated by its intended audience and will need further study, scoping and additional work, if this tool will be carried over in the next phase.

## 4.5 Output 5: Links to UN Water Family platforms to support targeted knowledge sharing and dialogue

The UN Water Platform section (http://iwlearn.net/un-water-platforms) was launched in November 2013 to provide a single-point access for the GEF IW community to information emanating from UN Water. UN Water is the UN's inter-agency coordination mechanism for all freshwater and sanitation related matters, consisting of 31 Members and 37 Partners (as of launch, UN Water was composed only of 30 UN agencies and 23 intergovernmental organizations)

The UN Water Platform section features a profile page for each member organization, highlighting in particular activities and links relevant to the GEF IW community as well as contact details (Fig. 10). This page is curated manually as the sources of information are also static. News published on these websites automatically stream in IWLEARN.NET through newsfeeds, whenever available. A federated search has also been made available to allow users to search any or all of the UN water websites through a single search form in iwlearn.net.

This activity was originally planned to be carried out in partnership with UNU-INWEH, which at the time was the Chair of the UN Water. The team made several attempts to jointly execute it but two years after the start of the project, no progress nor specific agreement on how to move forward were presented by UNU. Fortunately, in November 2012, Dr. Claudia Hiepe, Programme Officer for the UN-Water Decade Programme on Capacity Development (UNW-DPC), reached out to IW:LEARN in relation to the UN-Water Activity Information System (UNW-AIS), which UNW-DPC is in-charge of.

In the course of setting the link between UNW-AIS and IWLEARN.NET, SEA START had the opportunity to discuss and explore information distribution within the UN Water mechanism. It was interesting to note, that during that time, UN Water were also struggling with the same obstacles in terms of online information sharing, i.e., UN Water websites are not required to comply with any standard information sharing protocol like RSS/Atom feeds, there were no clear guidelines on interoperability, metadata standards and content structures, and UN websites were using different CMS etc. The latter can be seen as an advantage for resilience and technical resourcefulness, as long as a balance between diversity and continuity is maintained.

Another finding was that, although most of the GEF agencies involved in the IW projects are members of the UN Water family, including the GEF itself, the IW:LEARN project was not often mentioned in discussions. It is most likely that the agency representatives know very little about the IW:LEARN and/or are not involved in any GEF IW project.

Eventually, IW:LEARN focused on featuring and disseminating information and news from the UN Water websites to projects and partners through IWLEARN.NET and social media.

In the Nairobi ICT Workshop in 2013, UNEP-SEASTART team had the chance to meet Stefanie Neno, the Communications Officer responsible for the main UN Water website who was also representing a GEF IW project implemented by the FAO, who introduced the team to the UN Water LinkedIn group consisting of Communications Officers from the UN Water websites. Since then, this LinkedIn group has served as a means to keep abreast of the water issues being tackled by member organizations and another node for promoting the work of the GEF IW portfolio.

Figure 10. Screenshots of the UN Water Platform main page (right) and sample profile page.
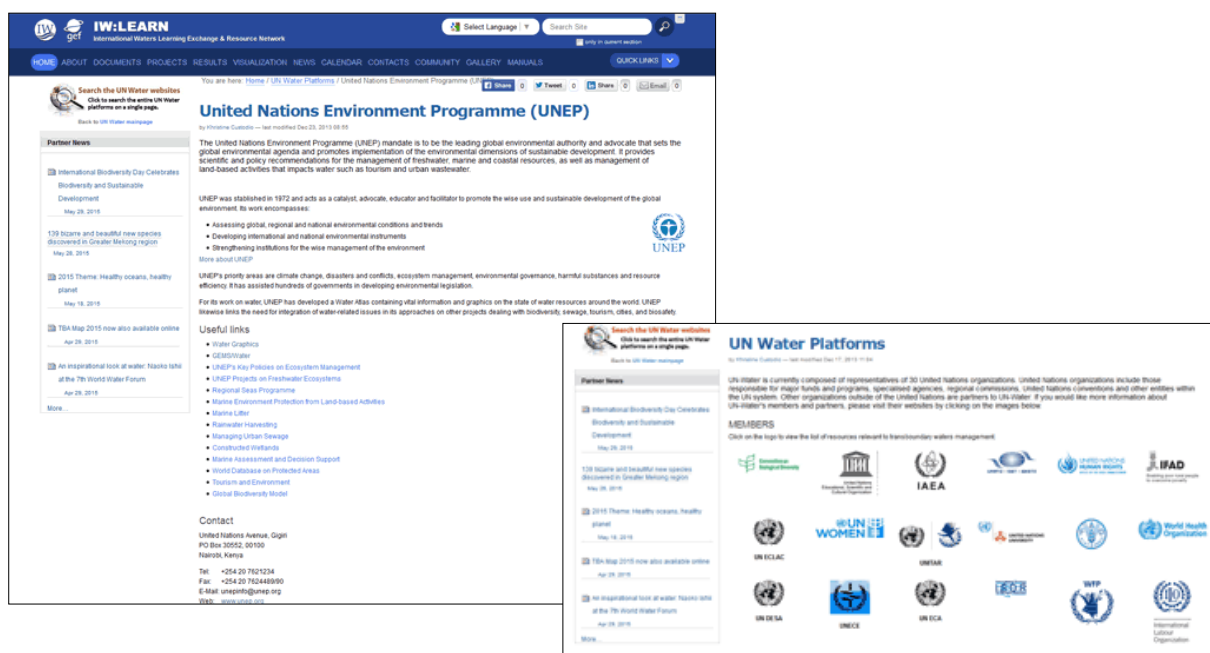


## 4.6 Output 6: Online workspaces for specific portfolio sub-groups such as COPs, project managers and governments, and the International Waters Task Force

In support of the IW:LEARN Project's Global Community of Practice (COP) on Surface Freshwater and Groundwater component implemented by the International Union for Conservation of Nature (IUCN) and United Nations Educational, Scientific and Cultural Organization, International Hydrological Programme (UNESCO-IHP), the UNEP- SEA START PCU launched a sophisticated web-based CoP tool with a simple user interface yet powerful features to suit the preferences indicated by project managers in a user survey conducted in April 2012 and based on a 'wish list' crafted with the IUCN and UNESCO-IHP.

The GEF IW Community Platform (http://community.iwlearn.net; inaccessible starting 1 June 2015 until service renewal), developed using an Open Source web community module, boasts strong email integration which matches the targeted managers and practitioners heavy dependence on email communication and resistance to logging in to websites to participate or access information. With the email integration feature, members of the Community Platform can directly receive discussions, announcements and files in their inbox and reply from email which will then be distributed to members of their community, along with archival/posting in

the Community Platform. Members can initiate discussions and distribute files from their email as simple as using the community mailing list generated automatically by the platform when a community is added/created.

Other features[3] include system-wide tagging, blog, wiki, calendar, folder, experts' roster, site-wide granular search. Each community contains an overview page, a blog, a wiki, a calendar, and a file storage page (Fig. 11).

Figure 11. Main landing page of the GEF IW Community Platform.



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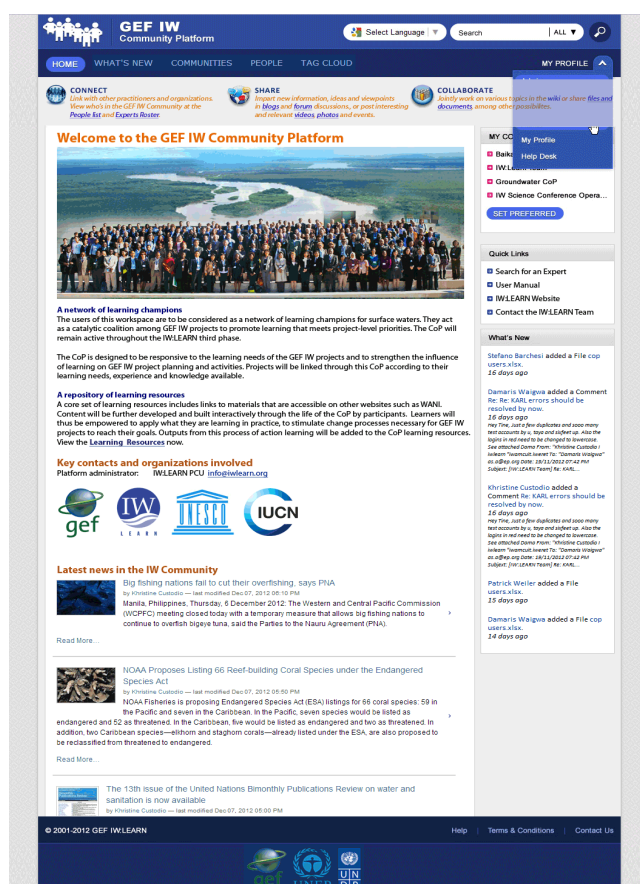
[3] The technical details for the Community Platform are described further in Annex 1.

During Phase 3, the team enabled seventeen (17) communities/workgroups and sub communities to have an online presence with the Surface Freshwater CoP and the Transboundary Waters Assessment Programme, Data and Information Management Committee (TWAP DIM) CoP being the most active. The UNEP-SEA START team also moderated the main community where general announcements were dispensed to all members of the platform.

Additionally, website toolkits were created for the Global Groundwater CoP (http://groundwatercop.iwlearn.net) and the Global Surface Freshwater CoP (http://freshwater.community.iwlearn.net). Both IUCN and UNESCO-IHP were pleased with the hosting and technical support provided in the development of these websites.

In July 2013, IW:LEARN assisted the IUCN in conducting its two Surface Freshwater CoP Webinars which was well received by the participants. The video recordings are posted at http://freshwater.community.iwlearn.net/videos-3.

While IUCN in general had been positively receptive and cooperative in using the online platforms provided by IW:LEARN, for some time, there has been a difference of opinions between IW:LEARN and UNESCO-IHP (specifically in their engagement in the Community Platform) as the enhancements implemented by the team in response to UNESCO's request did not fully satisfy their expectations. Eventually, it was agreed that UNESCO-IHP would use the UN-International Groundwater Resources Assessment Centre (UN-IGRAC) CoP platform which has been offered to UNESCO for the purpose of the Groundwater CoP at no cost. This had the features desired by UNESCO and will also be strategic for the component since UN-IGRAC already had a membership base consisting of groundwater experts and practitioners from various parts of the world. UNESCO continued to use the website toolkit alongside the UN-IGRAC CoP platform.

## 4.7   Output 7: Training and technical assistance for individual project websites development to support targeted knowledge sharing

A total  of six (6) regional trainings (Table 3) on the IW:LEARN Website Toolkit and emerging ICT topics, including data visualization, were held in (1) Ayutthaya, Thailand; (2) Dubrovnik, Croatia; (3) St. Kitts; (4) Delft, Netherlands; (5) Nairobi, Kenya; (6) Manila, Philippines. Additionally, two (2) ad hoc trainings were also conducted in Athens, Greece and Manila, Philippines to give projects who were unable to send representatives to the regular regional ICT workshop an opportunity to benefit from IW:LEARN's capacity building modules on ICT topics. These workshops were made possible through co-sponsorship by the requesting projects hence making it possible for IW:LEARN to organize with minimal effort and within the budget allocated for this activity.

Two participant-led workshops were also organized and held during the IWC6 and IWC7 in Dubrovnik, Croatia and Bridgetown, Barbados respectively where project managers and representatives from GEF agencies and partner organizations were able to benefit from discussions covering emerging ICT topics directed at the management level. IWC6 became a venue to introduce the ICT services provided by IW:LEARN3 while IWC7 centered on the

challenges, rewards and opportunities experienced by the projects in implementing data visualization activities.

Table 3. Summary of ICT workshops

| Region | Date held | Venue | # of projects | # of participants | Milestone(s) reached |
|---|---|---|---|---|---|
| Asia and the Pacific | May 2011 | Ayutthaya, Thailand | 11 | 22 | Humboldt and CTI-KM website launched; ATSEA website migrated to Website Toolkit |
| Open | October 2011 | Dubrovnik, Croatia (IWC6) | 4 | 5 | Kura-Aras website launched; assisted IWCAM in updating the website |
| Latin America and Caribbean | May 2012 | St. Kitts | 11 | 11 | FREPLATA and La Plata websites were launched, Humboldt website enhanced |
| Ad-hoc | June 2012 | Athens, Greece | 2 | 3 | DIKTAS, Baikal websites launched |
| Africa, Europe | October 2012 | Delft, Netherlands | 8 | 10 | Launched websites for TWAP, KDCP; upgraded CCLME website and Lake Tanganyika Authority |
| Africa, Europe, Open | May-June 2013 | Nairobi, Kenya | 8 | 11 | Piloted data visualization as a key topic in the ICT workshop; COAST project launched interactive project demo sites map; Baikal project launched tested the IW:LEARN Geonode |
| Asia, Open | March 2013 | Manila, Philippines | 8 | 21 | First full intensive 4-day workshop on data visualization; Baikal basin data uploaded to IW:LEARN Geonode and launch of Baikal Information Centre |
| Manila Bay Watershed – PEMSEA region | October 2014 | Manila, Philippines | 1 | 23 | Catalyze the importance of Open Data principles at the national/country level based on the IW:LEARN experience; discovered disconnect among key national and local agencies in terms of both data management system and operations; UNEP-Live work promoted; advantage of online web, collaborative Open Source platform presented and hands-on skills provided |
| IWC6 | October 2011 | Dubrovnik | | 19 | The UNEP IW:LEARN3 Component 4 services were introduced to project managers, therefore igniting buy-in from the projects; inquiries immediately followed |
| IWC7 | October 2013 | Barbados | | 28 | Management issues, results and opportunities related to GIS, data visualization and mapping were presented by select project managers; IBM, as one of the participants, expressed interest in collaborating with IW:LEARN |

The ICT workshops were organized for three main purposes: (1) to introduce and provide (basic and upgraded) hands-on skills on the Website Toolkit for projects who had decided to avail the free hosting and technical support that comes with the Toolkit; (2) to promote the Website Guidelines and emphasize the importance of adopting interoperability standards in the era of Open Data revolution aimed at both Toolkit users and users of other web platforms; and (3) to discuss emerging ICT technologies, solutions and best practice.

The ICT workshops also served as a way to strengthen the relationship of IW:LEARN with the projects and also provided a venue to promote the works of the projects which in turn provided the opportunity to learn from each other, and in some cases, to synergize, especially for projects working in the same region or on the same theme/issues. The ICT workshops also catalyzed the

important use of ICT in development and environmental management causes and introduced participants to concepts such as Open Data and Open Source and its current use in the wider online community.

Additionally, online training materials and useful online references were made available in IWLEARN.NET, and by-request Skype tutorials were conducted to provide post-workshop support and continued technical assistance.

To keep projects motivated to enhance their website, two (2) IW WOW Awards were given to the 'best' project website during the IWC. Prizes include a trophy and a smart phone (IWC6) and HD, action (also underwater) cameras (IWC7).

## 4.8   Other outputs

To promote the ICT services and the overall online and on-the-ground services rendered by IW:LEARN, SEA START RC designed and produced promotional materials that the stakeholders found to be useful and practical (Fig. 12). Posters and graphics were also designed for conferences such as the IW:LEARN posters for the 5th Assembly of the GEF held in Cancun in 2014.

Figure 12. Distributed at the GEF IW Science Conference in 2012, the IWLEARN Notebook (left) featured foundational information about IW:LEARN and its services as well as instructions on how to use the Community Platform and links description for the Visualization Tools. The desk calendar (right) was distributed at the IWC6 (2011) in Dubrovnik. It also promotes IW:LEARN, the IW:LEARN website and key webpages and the GEF IW Science Conference.
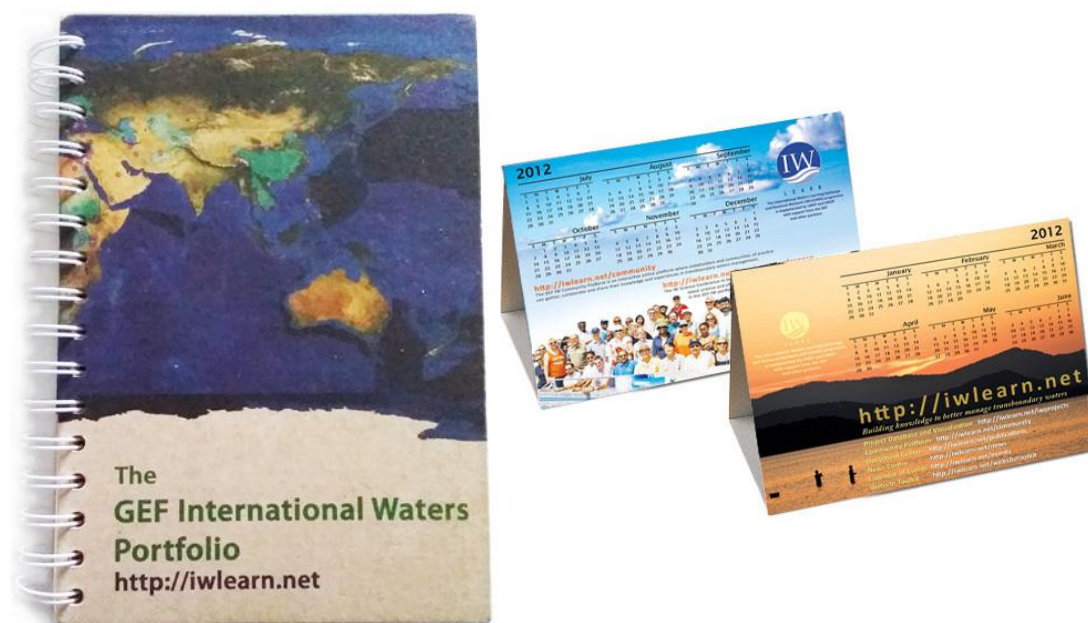
## 5 Major Issues and Concerns in Project Implementation

5.1 The most critical and persistent issue in the overall implementation of Component 4, especially in the development and management of the websites, was finding the right balance between the user requirement specification (how a product will work entirely from the user's perspective) and the technical specification (internal implementation of the software/system). This led to both unfulfilled expectations of some members of the Steering Committee on one hand, and under appreciation of the technical expertise, hard work and commitment put in by the technical part of the IW:LEARN PCU (UNEP and SEA START) on the other. While the UNDP part of the PCU attempted to provide leadership within the PCU in scoping the requirements for the Visualization Tool, PRA and Manuals, without the consensus of the majority of the Project Steering Committee satisfaction could not be guaranteed.

5.2 The feedback mechanism from the GEF IW community on the ICT components, in general, has been low and slow. The technical team had difficulties assessing the usefulness of every web feature and every platform introduced because its intended users took time to take advantage of these online services and/or were not able to provide timely feedback to the team, hence, the team assumed that after its own rigid testing, everything was working fine. Some of the critical issues arose during conferences and major meetings when stakeholders were forced to use new IWLEARN web services, for the first time, and all at once. In system development, normally what goes wrong are the unknown, and this is where having as many people as possible with various digital literacy and who are able use a new software in dispersed time, ahead of a major event, matters. Incremental use and feedback are key.

5.3 As previously highlighted, most members of the Project Steering Committee, the GEF IW Task Force, project managers, etc. appeared not to have helped in promoting the new web services offered by IW:LEARN themselves. It is important and necessary that the people who asked for the features in the project document must themselves use the services created in response. It is acknowledged that most managers and practitioners in the community are also managing multiple activities, dealing with a variety of problems and interfacing with a wide range of stakeholders, but these same managers must be able to allot time to participate or provide feedback if progress is to be achieved. In the case of the Website Toolkit, the active participation of the UNDP and UNEP Task Managers has been instrumental in getting new projects to use the Website Toolkit and/or to comply with the Website Guidelines, and seek the PCU's advice in building a project website so that it contributes to the seamless stream of information in the portfolio.

## 6 Recommendations

6.1 Having an agreed document (User Specification Document) prior to the implementation phase of the next phase, which includes specifications and objectives, intended audience, any measurements of quality or success be taken with respect to end-user, together with agreed actions and noting who is responsible for different tasks, will reduce the likelihood of misunderstanding and misinterpretations. The key details of the User Specification Document include how the site will work for the user, with a focus on identifying user end-goals and satisfying them -- not on "flashy" features. However, technical specifications, including decisions on CMS and tools, should be left in the capable hands of the experts in

this field and should be written by software developers and architects, who will describe how they will implement the project, and ensure that the technical choices will support the desired functionality.

6.2 To avoid the pitfalls of unfulfilled promises or unmet expectations, when finalizing the User Specification, the reality that the needs of the user will not be fully and accurately anticipated at the outset, e.g., the landscape of devices and social media has changed completely in the last few years, should be conveyed to the Project Steering Committee. The goal of a technical team fully delivering a specification that satisfies all users is unrealistic and will lead to mutual dissatisfaction. Therefore the approach should be an iterative one of give and take. There should be users involved in the development of new functionalities, e.g., via A/B testing or via early users of a beta site.

6.3 A worthwhile goal is to build the expertise and culture within which technology becomes a malleable, accessible tool within the organization. This approach is starting to be exemplified by the United Kingdom Government Digital Service (GDS). A good entry point to this approach is this Constitution for the Digital Engine Room: https://therichardcopley.wordpress.com/2015/05/24/i-hold-these-truths-to-be-self-evident-a-constitution-for-the-digital-engine-room. Note the points regarding Integration and APIs (application programming interfaces), 'minimum viable product' principle (MVPs), and infrastructure ownership.

6.4 It is also important to note that most complaints from key users are user interface (UI) and user experience (UX), which are design-related and not about a dysfunctional system. For example, the more advanced online users would appreciate the key features of the visualization tools (both in iwlearn.net and Geonode) as it provides a way to do granular filtering of display and reuse of map layers for their own purposes through KML file download and Web Map Service protocol. But for the ordinary users, having too many buttons to click, too many options to choose from might be overwhelming. The team has setup a good technological baseline ideal for building a more advance use of the data and information hosted in IWLEARN.NET. Although it is easy for (non-IT expert) project managers to point to the system as being faulty as a whole, from a technical point of view, the missing link is actually the use of a more intuitive design that the common user with basic IT knowledge will be able to understand and use. Hiring a seasoned UX/UI design consultant at the start of phase 4 would address the said concern.

6.5 Representatives from the GEF and the agencies should be the first to foster a true spirit of community be it for on-the-ground activities or online collaboration. As John Maxwell puts it, "A leader is one who knows the way, goes the way, and shows the way," therefore seeing leaders participate in every conversation, acknowledging people's opinions and contributions be it through a small 'thank you' or 'noted' line will go a long way in making practitioners in the community feel welcome and participate more actively in discussions and activities.

6.6 There is a strong need for the GEF IW Task Force and the members of the Project Steering Committee to ensure that every IW project contributes, cooperates and participates more actively in the knowledge management processes that IW:LEARN is promoting. Stronger enforcement from the agencies, e.g., timely production and submission of Experience and Results Notes, regular publishing of news, etc. will help foster the knowledge and experience

sharing and create more opportunities to synergize on related activities or simply learn from each other.

6.7 At the start of project implementation, the PCU (whether centrally located or distributed), ideally should have their own small and focused inception workshop where every team member can be provided with the same base understanding of the goals, expected results and conduct of business, and where they can also be trained on how to use the IW:LEARN online systems publishing and archiving contents as a core project management tool. This will solidify further the team's effort in achieving the same end goal.

6.8 While most managers involved in the earlier phases of IW:LEARN have acknowledged the good working relationship evident in the daily interaction of the joint PCU, which has been one of the challenges in the past, there still a need for a closer project links between UNDP and UNEP, especially in terms of post-activity reporting. For example, the UNDP part of the PCU should aim to publish a feature article on any meeting or workshop they have organized in a timely manner so that these are made known to the wider community. They can also share their mission reports with the UNEP part of the PCU, who can then help them prepare an article and publish it to the website and the e-Bulletin. Also, key information should be centralized, and maintained and used by both UNDP and UNEP. This can be accomplished in various ways, e.g., if IWLEARN.NET or the online intranet has a way of grabbing the copies in team members' computers, then it is adequate if members are updating them in their own workstation. This could be accomplished via Dropbox, or Google Docs, or OwnCloud, or if projects are publishing their own information on the web, via Atom or OpenSearch. This mode of operation should be tabled at the PCU inception workshop.

6.9 The IW:LEARN project should be listed as one of the agenda items by the GEF agencies representatives to the UNWater Partnership meetings. Ideally, they should help mainstream and promote the work that IW:LEARN is doing and also bring opportunities relevant to the GEF IW community closer to IW:LEARN. It will also be beneficial if IW:LEARN can be invited to present its objectives and services in one of the UN Water meetings.

6.10 While the PCU has been using an issue tracker to log technical issues since the earlier days of IW:LEARN website management, it is key that every team member, and ideally also main users of ICT services such as the website toolkit, should religiously use issue trackers to log issues and requests, and efficiently monitor and collaborate on a project. In the PCU, most technical requests and discussions took place on Skype and email, which in most cases made it difficult to track revisions and statuses in cross conversations, and specially in bringing them to a closure. As it is possible that one system will not suit everyone -- some issues may come in via a service like *uservoice*, some projects may find Trello or Asana or Basecamp more useful, technical staff may need the more complex feature set of Jira, but choices should always be made with integration and migration in mind. There should be an accessible overview of the whole, and there should be a means to consolidate issues between multiple trackers. If there is a single tracker in use, it should be able to provide simple filtered views to different audiences.

6.11 Efforts toward scaling up the digital literacy of managers should also be one of the focus points. Of the current decisionmakers and scientists within the portfolio, possibly many are still trying to work on a daily basis using twenty-first century applications and speeds with eighties-like or nineties-like skills, and finding it difficult to adapt to the quickly evolving technology. On the other hand, the question needs to be asked as to how many complaints

have been voiced about having or receiving 'too much information'. Not to discount the fear of finding oneself overwhelmed by increasing workloads, higher quality demands, and ubiquitous, relentless 24/7 communications modern technology have been recognized as some of the issues users with lower digital awareness face (Jones & Hafner, 2012)[4]. In the digitally connected world, this has been recognized as a result of a user's inability to effectively filter out important information from the miscellaneous ones, and a failure for the application developer to provide users with the necessary filters (in the user interface) to help distinguish the two -- akin to coming to New York on a busy day and having to find an office or a shop. Having a map at hand provides a way to filter out all the unnecessary signage, posters, buildings and what-not and focus solely on the relevant data. Another advantage of placing importance on digital literacy is that it provides an understanding of how effective communication mediated through digital technologies becomes essential to coordinate with people and manage tasks. Putting value on the role of digital literacy in a Knowledge Management organization 'across-the-board' is therefore essential.

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[4] Rodney H. Jones and  Christoph A. Hafner, *Understanding Digital Literacies: A Practical Introduction* (Canada; New York: Routledge, 2012).

## Acknowledgments

# Annexes

## Annex 1. Technical overview of the IWLEARN online platform

**1. Purpose**

The purpose of this document is to provide detailed technical user specification for the IW:LEARN Project website ([http://iwlearn.net](http://iwlearn.net)) and key linked platforms that will guide website managers and developers in planning future costs, schedules, milestones and priorities in system development. As such, this document will cover the system's current features and workflow processes.

**2. Intended audience**

There are three main target audience for this document: (1) website manager/s and developers as technology experts and implementers of system development and management; (2) content managers in the Project Coordinating Unit (PCU) as the immediate end-user of the platform; and (3) members of the Project Steering Committee as the center of strategic decisionmaking within the IW:LEARN Project.

**3. System description**

3.1. **Rationale on the use of a CMS and Plone for the IW:LEARN websites**

A CMS would not be suitable to build a banking interface or a travel booking site or a dating site or any such goal-oriented single-page-application type of site. It's most suited for when there's a lot of *content* to be *managed* by site members.

Content in this sense normally doesn't refer to thousands of database rows of account details. It refers to varied and disparate collections of notes, long documents, files that may be presented in various formats, events, domain-specific contents, maps, images, etc. They may reference each other automatically or explicitly, and may be arranged in terms of nested folder structures, tagging by controlled vocabularies, grouped by type or other attributes, etc. They may also pertain to different audiences; for example documents under review are accessible to editors, and documents pertaining to some workgroup are accessible to workgroup members. Contents may be embargoed until some publication date, and withdrawn after an expiry date. To facilitate this, a concept of workflow is needed; different cases may require different workflows.

IW:LEARN's use of open source CMS, specifically Plone CMS and its extensions, has enabled the project to redistribute and transfer web development capacity to the rest of the projects in the GEF IW portfolio through the Website Toolkit template. As an unspoken golden rule and living up to IW:LEARN's name as a 'resource network', the PCU has invested in developing features, processes and practices that can be replicated at minimal or no cost by any project and partner in the portfolio.

### 3.2. System features

As documented in http://docs.plone.org/intro/index.html:

3.2.1. Plone is a powerful, flexible Content Management Solution that is easy to install, use and extend.

3.2.2. It lets non-technical people create and maintain information for a public website or an intranet using only a web browser.

3.2.3. It has security as a high priority, and has suffered no breaches during its time of operation.

3.2.4. It has an involved and helpful community that bridges many types and sizes of organizations, many countries and languages, and everything from technical novices to hardcore programmers. Out of that diversity comes an attention to detail in code, function, user interface and ease of use that ensures the CMS is evolved and kept secure.

3.2.5. The intellectual property and trademarks of the CMS are protected by a non-profit foundation.

3.2.6. Plone is widely used across large and small businesses, education, government, non-profits, sciences, media and publishing. There is a global network of solution providers.

3.2.7. It is open on many levels. It runs on Linux, Windows, Mac OS X, FreeBSD and Solaris. It has been translated into many languages, and is developed with an emphasis on usability and standards compliance.

3.2.8. It integrates with Active Directory, Salesforce, LDAP, SQL, and many other Web Services.  It meets or exceeds accessibility standards as set by US Government 508 and W3C's WAI-AA.

3.2.9. Substantial users. Organizations as diverse as NASA, Oxfam, Amnesty International, FBI, Nokia, eBay, Novell, the State Universities of Pennsylvania and Utah, as well as the Brazilian and New Zealand governments - all use Plone.

### 3.3. Operating environment

IW:LEARN uses the current Ubuntu LTS (long-term support) server, but Plone can be hosted on any Posix platform. System packages can be used for dependencies, but Plone also supports building everything from source during installation, for an environment that is largely independent of server configuration. Plone uses the ZODB object database, so does not depend on an RDBMS being available. Performance is best with sufficient RAM to accommodate database catalog indexes without a lot of disk access. This depends on database size. IW:LEARN use about 2GB per Plone cluster.

## 4. Modules

The IW:LEARN website is a bundled with a range of freely accessible (from http://plone.org) and in-house developed add-on products that was carefully selected to meet IW:LEARN and its target users' demand.

System modules and workflow for http://iwlearn.net.
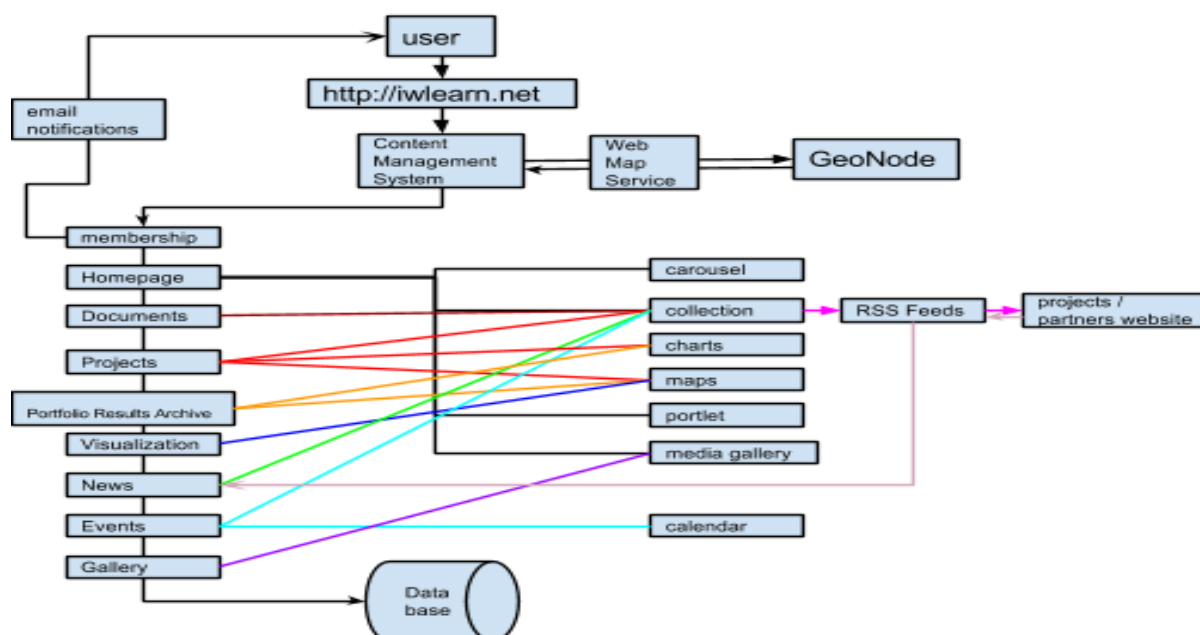


4.1. **Project database** *http://iwlearn.net/projects*: The IW:LEARN Project Database hosts up-to-date information and outputs about every project within the GEF IW portfolio. As a custom-built module in IWLEARN.NET, the Project DB enables content managers to harvest data on the latest project entry in the IW and multi-focal areas from http://gefonline.org using the *maintenance* tab. However, It is important to note that the GEFONLINE.ORG db structure does not include information about project contacts, basin, outputs, etc. and only provides static content, hence some additional editing or research needs to be undertaken by the PCU before publishing a project in the ProjectDB. For example, compare http://www.thegef.org/gef/project_detail?projID=2700 with http://iwlearn.net/iw-projects/2700.

A project entry in the Project DB contains related documents, news items (locally produced as well as harvested from project feeds), media, and maps, as well as project evaluation ratings and geo-references provided by the collective.geo suite of add-ons that allow data to be placed on maps or rendered as graphs. Depending on the activities of the project, nested folders may be added to accommodate collections of documents or media. For these type of information, the PCU either does its own desk research (using search engines, visiting the project website if it exists, emailing project contacts, scanning feeds, etc). Proactive project members and contacts in the GEF agencies periodically get in touch with the PCU to share any important milestones or outputs for archiving and wider distribution. A massive updating of project contact data is carried out at least annually while updating of project outputs is a regular weekly task.

## Project database



## Website archiving
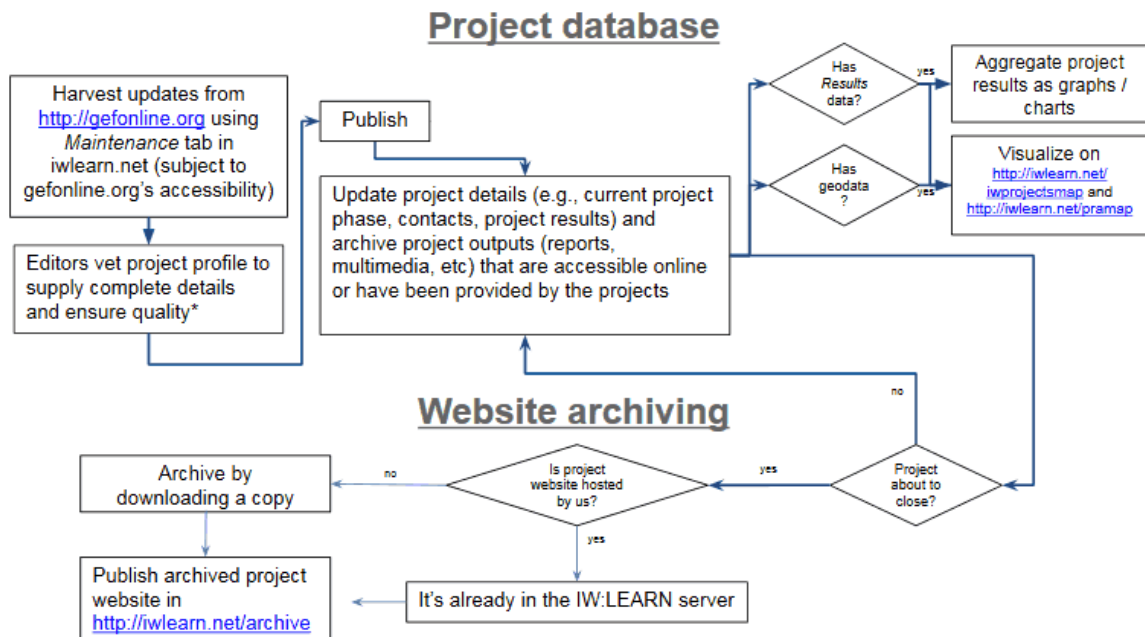


4.2. **Website archive** *http://iwlearn.net/ebulletin*. As an adjunct to the main task of publishing project information, the IW:LEARN project has undertaken to create mirrors of the websites of closed projects, and to make these accessible over the web.

4.3. **Contact database** *http://iwlearn.net/con-info*. This offers Person, Group and Organization types that are structured in terms of reference and containment. The contacts can also be accessed as Resource Description Framework (RDF) triples in the well-known Friend of a friend (FOAF) format, which can be used to synchronize contact information by CMS's such as Drupal and Wordpress.

4.4. **Search tool**. The search engine catalogues content in many specialized indexes. In the first place, documents are indexed in the fulltext index. In the case of office docs, PDFs, etc, documents are passed to a conversion pipeline to extract searchable text. In the second place, specific fields are cataloged in keyword- or field indexes, which support navigation, the creation of collections, categorization, faceted navigation, and so on. Content is also extracted and processed by a similarity engine, which does automatic relating of similar documents (displayed as Related Items on webpages). Other special indexes include date/time indexes, and geographical indexes used by the map functionality.

4.5. **Document library** *http://iwlearn.net/documents*. This is a searchable archive of project outputs and knowledge products emerging from the projects (e.g., Experience Notes, TDA, SAP, newsletter, etc), partners and authoritative sources. If a document is produced by a project, the document is uploaded within that project's folder in the Project DB, so that the relevant relationships are maintained in the Project DB.

## Document Library
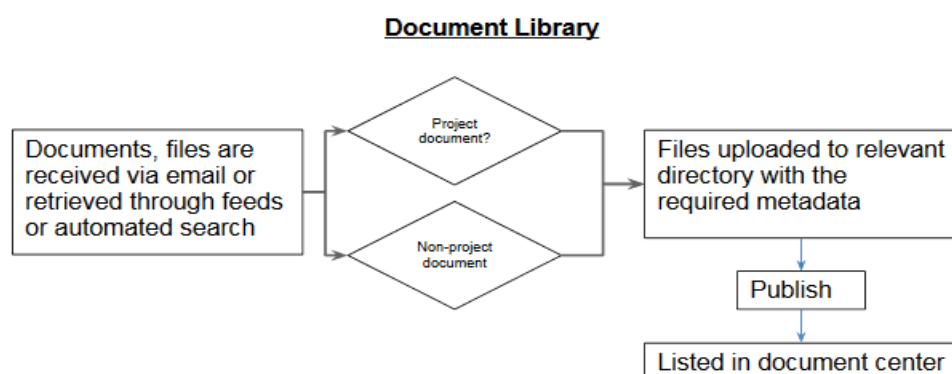
4.6. **News** *http://iwlearn.net/news*. These are information and services that give stakeholders a one stop shop access to the latest milestones, activities and opportunities relevant to the portfolio. The IW:LEARN PCU syndicates news from project and partner websites through RSS and ATOM feeds. The PCU ensures that only the latest, most relevant information from authoritative sources are published in iwlearn.net. Additionally, the team monitors other useful information through individual subscriptions to newsletters and receives press releases and announcements from email messages which are manually posted in the websites if an online version is not yet accessible. The advantage of manual uploading over regular linking is that the information remains available in iwlearn.net even when the source no longer exists. News, in particular, is highlighted at the homepage through a slider to provide visitors the latest update in the portfolio and the broader IW community. The IW:LEARN CMS was configured to use the geo-tagging (region) associated with a project folder to display it on a single page together with news coming from the same region to test aspect-based navigation.



News and news feeds
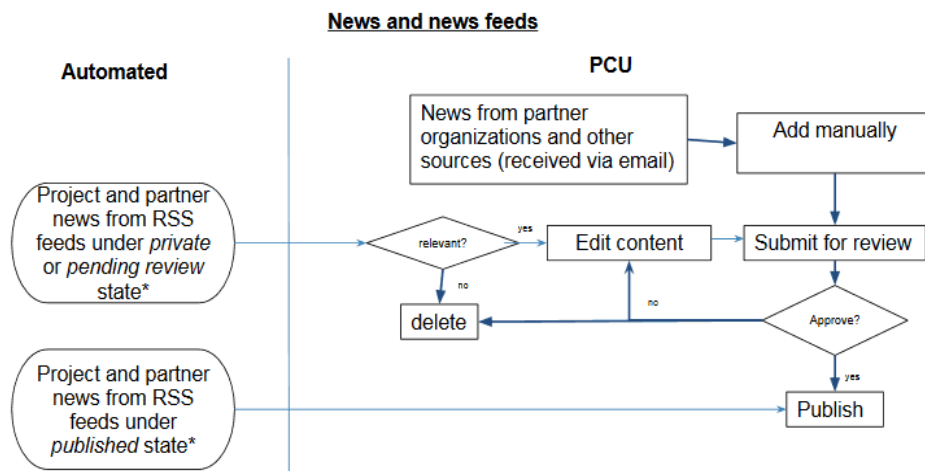
4.7. **Events/Calendar.** Events appear in the calendar view upon publication and are withdrawn upon expiration. The IW:LEARN CMS was configured to use the geo-tagging associated with an event, to display it on an events map.



Events*

4.8. **Jobs**. This section provides useful information for practitioners seeking for career opportunities. Vacancies, scholarships and similar announcements coming from relevant organizations are posted here.
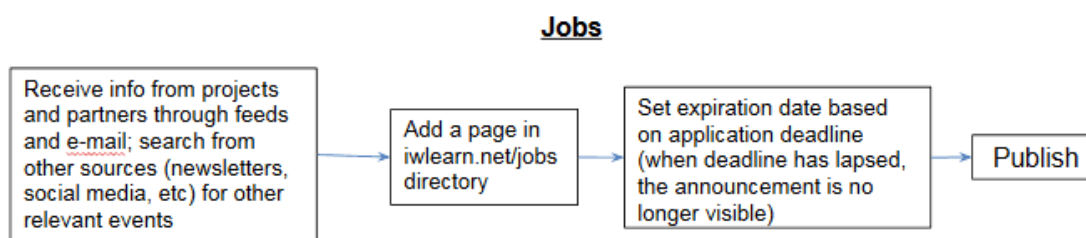


4.9. **Media Gallery.** The Media gallery allows users to view a slideshow of images and videos from the projects and partner organizations, using IW:LEARN-specific categories: by basin, by region, and by activity (another use of aspect-based navigation). Both thumbnail and list views are available. Project images are directly uploaded in the corresponding project folder in the Project DB while the Link content type allow videos from Youtube, Vimeo and TheWaterChannel to be viewed from the gallery. The same workflow for the Document Library applies to the Media Gallery.
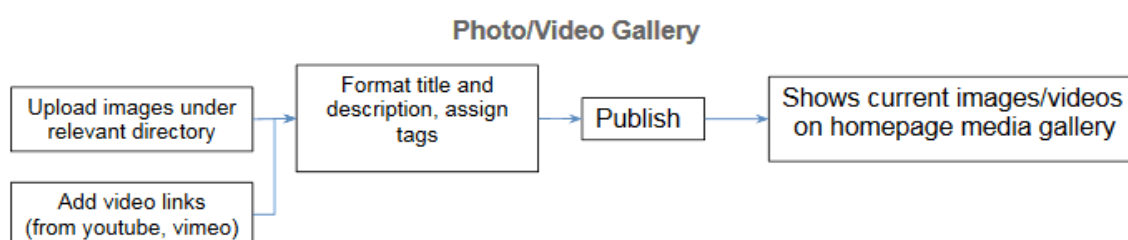


4.10. **Portfolio Visualization and Project results Archive tool** *http://iwlearn.net/visualization*. The Visualization Tool has two main parts – one presents the entire GEF IW portfolio using *'results'* data from the Portfolio Results Archive, and another using geo-references data in the IW:LEARN Project Database referred to as the Portfolio Visualization. Projects are visualized on maps and graphs with filters based on indicators and themes set in the GEF Tracking Tool and themes that projects work on. In the same manner, the Legal framework map displays the country or the basin covered by a specific legal framework and the projects linked to it. There is also an option for users to download the layers in standard spatial data format (KML).

The IW:LEARN CMS extends most content types with geographical tags, allowing them to be placed on maps. The map view finds all relevant projects depending on the viewing criteria, and processes the geo-annotations on them to show them on the map. It also adds a *document type* field to allow specifying the type of project document. A *maintenance* page which aids content managers in updating the Project DB within iwlearn.net links to a number of utility views enabling management tasks.

## Portfolio Visualization Tool
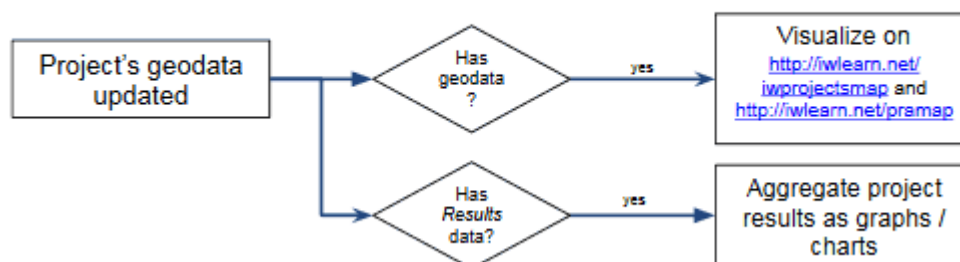


## Project Results Archive
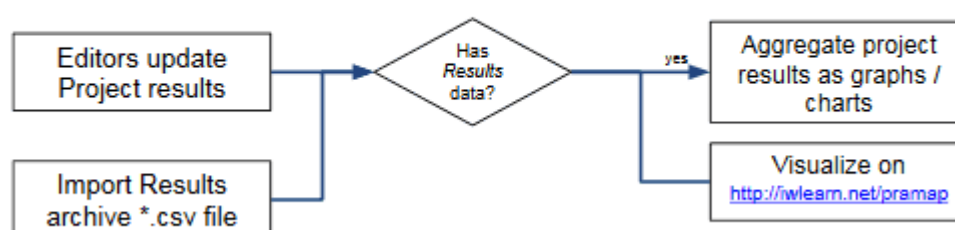


4.11.　　**E-bulletin/Newsletter** The monthly e-Bulletin is issued using a newsletter add-on module which provides a template that enables mail test and distribution, subscribers management, and provides both mail and web template. A default content type called Collection (a special content type) that works much like a report or query does in a database, and searches and list/displays searched contents based on a set of Criteria (dates, content type, tags, etc.). The newsletter module works with Collection to enable automated harvesting of contents for the five sections of the e-Bulletin.
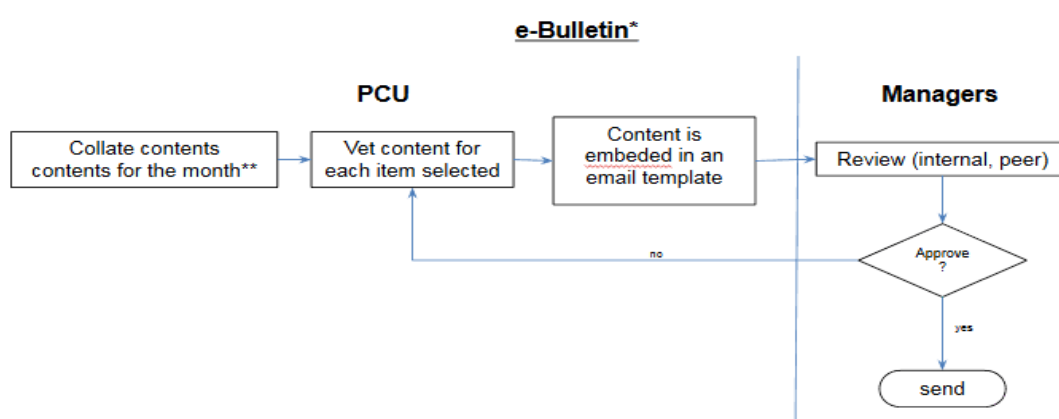


4.12.　　**Survey and poll.** *Polls* allow members or anonymous visitors to vote for one or more answers, while the *survey* module is used for collecting stakeholders' feedback. This is mainly used for pre- and post-events assessments. Surveys can be a simple single page form, or a multi-page survey with complex branching.

4.13.    **A web Form** is a module that allows content managers to create a through-the-web form commonly used for online event registration, such as for regional workshops and the bi-annual International Waters Conference.

**4.14.**    **Geonode** is an Open Source Content Management System (CMS) for geospatial data. It is a web-based application and platform for developing geospatial information systems (GIS) and for deploying spatial data infrastructures (SDI). It is being used to archive geospatial data from the projects and partners, such as from the Lake Baikal Project and the Dinaric Karst Project, with the intention to include these layers into the Portfolio Visualization Tool. Geonode extends Geoserver by allowing for user login, user groups, composition of layers into maps, and publishing of metadata. Geonode provides for editing content in private, publishing content (maps and layers), and assigning levels of access to users (viewing, editing own content, and editing all content).
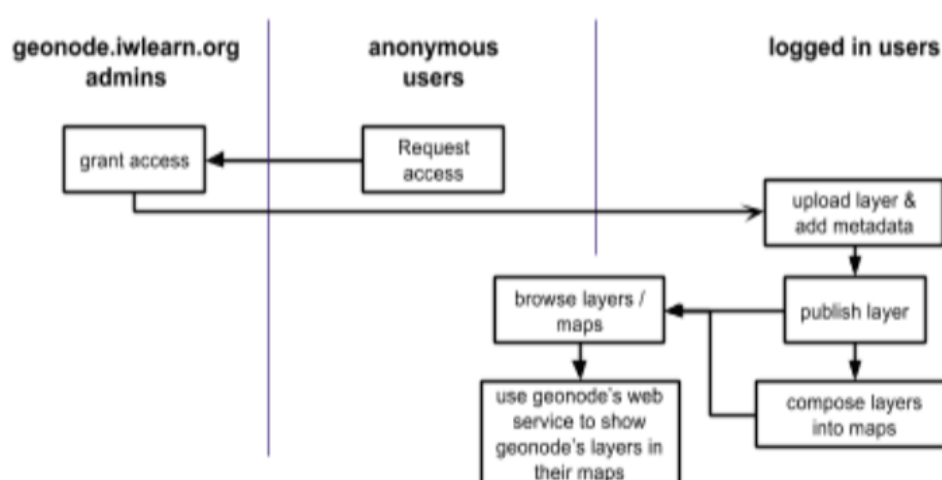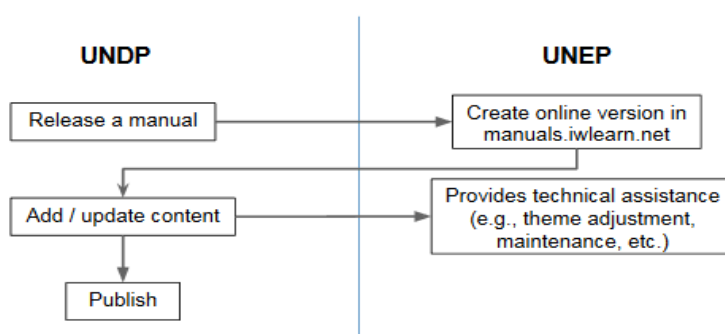




4.15.    **Manuals** The Manuals section started with the objective to guide project managers and staff in implementing a GEF IW project in line with the GEF requirements and on the TDA/SAP Methodology. It currently includes new guidebooks -- Public-Private Partnerships Guidebook and Mainstreaming Climate Change Guidance. The Manuals module consists of a glossary, library and an option to print the Manuals webpages in one go.

4.16.    **UN Water portals.** The IW:LEARN system is linked to the websites of members of the UN Water family via RSS feeds. It also features a profile page for each member which is curated manually. A federated search is available within the UN Water page to search all the UN water websites within iwlearn.net.

4.17. **Communities Platform.** Accessible in IWLEARN.NET from the Community section, the Community Platform is a separate website that is also based on Plone created for collaborative intranets and knowledge management. Each *community* comes with an overview page, a blog, a wiki, a calendar, and a file storage page. These tools can be used in many different ways and to varying extents, depending on the community's specific purpose. For example, if the function of the community is to plan an event, the calendar function might be used heavily, whereas the wiki page might be used more by a group wishing to compile information. Each community can make full use of each feature as they please. In the same manner, for a need to have smaller focus groups per community, a *nested* community feature is also available. Its main features include:

● **System-wide tagging**. It incorporates tagging at every level of the application. Community members can tag content, files, blog posts, and wiki pages with their own custom keywords and allow others to browse by those keywords. At the community level, a *tag listing* provides members with a quick and granular access to tagged content inside a specific group. At a global level, it provides a global tag cloud for a quick access to content tagged across all communities.

● **Strong email integration and granular email notifications settings.** When someone adds an item to any component, that user is given the option to send an email notification to the community. For members who find system authentication troublesome (logging in and out), the email integration feature enables them to reply to a notification and essentially participate in a discussion direct through their email boxes. Notifications can be set for each community the user joins. Users can set notification to 'Immediately' so they can receive individual alerts per post and reply directly to it without the need to login to the platform.

● **Expert's roster**. It is possible to find experts and practitioners using the 'expertise/skills', 'region worked in' and 'availability' filters. A member is enlisted in the roster by opting-in to the list and uploading their CV to their profile/user account.
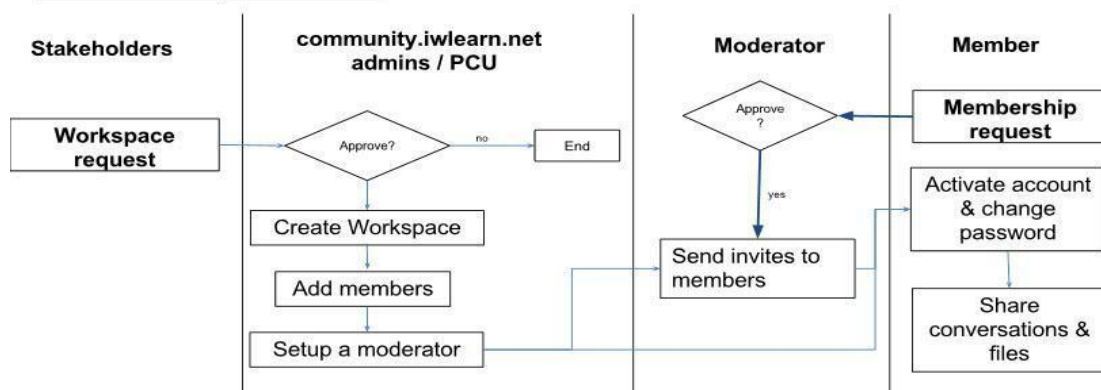


4.18. **Website Toolkit** The IW:LEARN Website Toolkit is a website template for projects that is based on the IW:LEARN CMS, with management delegated to project staff.

The websites share a curated set of add-ons. Theming is done per site based on project identity. It enables flexible ad hoc documentation of practices and specifications, self-hosted to avoid losing track of a sprawl of versions across cloud services.

The Website Toolkit provides support for developing a dynamic content management system for the GEF IW projects. These services are made available for projects with limited resources (manpower, skills, and budget).

IW:LEARN sets up a website packed with useful modules sufficient to fulfill day-to-day online information management and outreach-communication activities and hosts this website throughout the project's lifespan. Supplementary to the website creation and hosting services, UNEP holds bi-annual regional ICT Training to transfer capacity to project staff to carry on the day-to-day maintenance of the hosted website. A helpdesk, through email, Skype or ad hoc online trainings is accessible to projects for further assistance. If projects decide to independently develop and host their project website through an internal capacity or a commercial vendor, IW:LEARN reaches out to them to remind them to comply with the Website Guidelines, which outlines mandatory and recommended contents and features/services that their independent website should have to ensure interoperability and automated information sharing between websites in the portfolio.



**Website Toolkit**
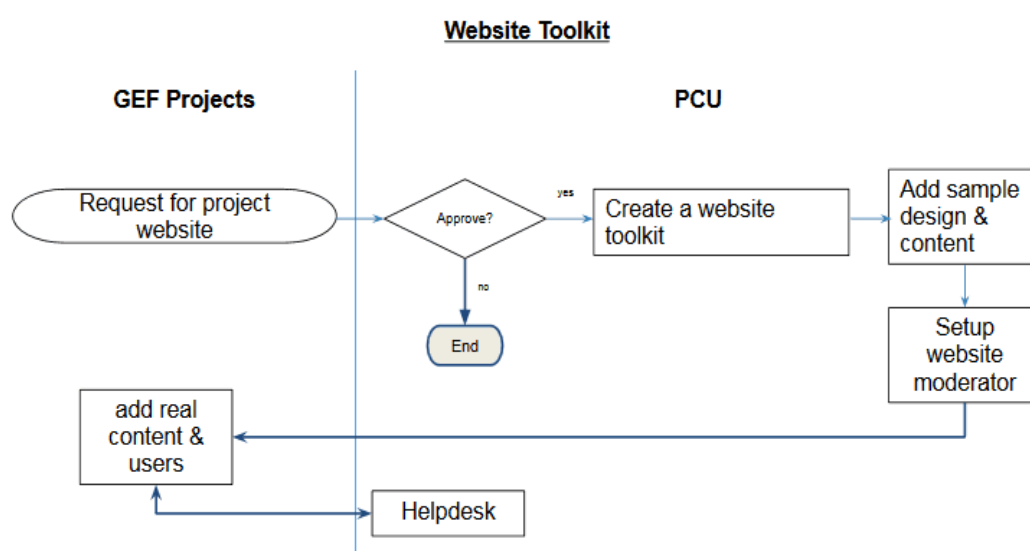
## Annex 2. Handover list

### 2.1 Key online subscription schedules

Webfaction (IW:LEARN managed server)          Expiring on  15 August 2015

GoDaddy (domain name: iwlearn.net)           Expiring on 3 Oct 2018

GoDaddy (domain name: iwlearn.org)           Expiring on 28 Jan 2018

SixFeetUp (KARL hosting: http://community.iwlearn.net) Expired on 31 May 2015

*(SFU will keep KARL dormant for the next 6 months. There will be a $99 reactivation fee for turning it back on)*


### 2.2 Access to the IW:LEARN server, services and subscriptions

The password safe to be handed over through a more secure means (to be determined separately) will contain access to: the IW:LEARN server hosted by Webfaction and administrative control panel; all hosted Plone instances and websites; process and event control systems; domain name host control panel (GoDaddy); and social media accounts, e.g., Facebook, Twitter, Slideshare, YouTube, etc.

To open and manage the database, download the software *PasswordSafe*: http://passwordsafe.sourceforge.net.

The format *admin@sites1.iwlearn3.webfactional.com [admin]* whereas *@ sites1.iwlearn3.webfactional.com* represents the URL and *[admin]* the user name

Pass Key: **Nt@rl72o**

Kindly take note that the mail server for the @iwlearn.org emails is being managed by Mish Hamid of UNDP (mish@iwlearn.org). The UNEP SEA START PC has no admin access to it.

For a proper closure, turning over server and hosting account credentials terminates our involvement with system administration and management tasks. Nevertheless, the administrators will remain available for any urgent issues and concerns and/or on contract basis if necessary.

## 2.3 Contacts for project websites developed and hosted in Phase 3

### Website Toolkit Users

| Project/Partner | URL | Contact person | Email | Status |
|---|---|---|---|---|
| International Nitrogen Management System (INMS) | http://www.inms.international | Will Brownlie, Clare Howard | wilown@ceh.ac.uk, cbritt@ceh.ac.uk | ongoing |
| GEF Blue Forests | http://blueforests.iwlearn.org/ | Steven Lutz, Tanya Bryan | Steven.Lutz@grida.no; Tanya.Bryan@grida.no | ongoing |
| Floods and Droughts Management Tools Project (FDMT) | http://fdmt.iwlearn.org | Raúl Glotzbach | Raul.Glotzbach@iwahq.org | ongoing |
| Gulf of Mexico Large Marine Ecosystem Project (GOMLME) | http://gomlme.iwlearn.org | Cristina Sánchez | csanchez.unido@gmail.com | ongoing |
| Dinaric Karst Aquifer System (DIKTAS) | http://diktas.iwlearn.org/ | Anna Maria Papaioannou | anna-maria@gwpmed.org | ongoing |
| Transboundary Waters Assessment Programme (GEF TWAP) | http://www.geftwap.org/ | Kaisa Uusimaa | Kaisa.Uusimaa@unep.org | ongoing |
| Arafura and Timor Seas Ecosystem Action (ATSEA) | http://www.atsea-program.org/ | Adi Pramudya | adipramudya@yahoo.com | ongoing |
| Kenya Coastal Development Project (KCDP) | http://kcdp.co.ke | Ednah N. Onkundi | eonduso90@yahoo.com,eonkundi@kcdp.co.ke | ongoing |
| Sulu-Celebes Sea Sustainable Fisheries Management (SSME) | http://www.ssme- | Marion Antonette Abuel – Daclan | marion.daclan@gmail.com | ongoing |
| Improvement of coverage and management of MCPA in Albania (mcpa) | http://mcpa.iwlearn.org/ | Lavdi Bakiu | lbakiu@gmail.com | project closed |
| Transboundary Waters Resources Management (TWRM) | http://www.twrm-med.net/ | Anna Maria Papaioannou | anna-maria@gwpmed.org | ongoing |
| Transboundary Waters Resources Management (TWRM-DRIN)/GEF project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin" | http://drin-basin.twrm-med.net/ | Anna Maria Papaioannou; Lia Zorzou | anna-maria@gwpmed.org, lia@gwpmed.org | |
| UNEP/GEF Volta River Basin Project | http://gefvolta.iwlearn.org/ | Hubert Onibon | Hubert.Onibon@unep.org | project closed |
| Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem | http://baikal.iwlearn.org | Dmitry Popov | DmitriP@unops.org | ongoing |
| Integrated Natural Resource Management in the Baikal Basin Transboundary Ecosystem | http://bic.iwlearn.org | Dmitry Popov | DmitriP@unops.org | ongoing |
| Southeast Asia START Regional Center (SEA START RC) | http://start.or.th | Suppakorn Chinvanno | suppakorn@start.or.th | ongoing |
| Canary Current Large Marine Ecosystem Project | http://www.canarycurrent.org | Tamba, Fatou | Fatou.Tamba@fao.org | ongoing |
| Humboldt Current LME project | http://humboldt.iwlearn.org/ | Lenka LAZO, Raul ARTEAGA | Lenka.Lazo@unops.org, RaulA@unops.org | ongoing |

37

## 2.3 Inventory of properties

SEA START RC will be the custodian of the equipment and properties funded by the UNEP-SEA START partnership listed below until further notice.  Retrieval of all or any of these properties should be arranged two weeks in advance with SEA START RC, through the following contact details:

**Viyada Karnjanajuta**
viyada@start.or.th
Southeast Asia START Regional Center
5th Floor Chulawich Building
Chulalongkorn University
Henri Dunant Road
Bangkok 10330, Thailand
Tel: +66 2 218 9464/7
Fax: +66 2 251 9416
*and*
**Montakan Chimmuang**
Mobile: +66 (0)851 324 909

| Box no. | Description |
|---|---|
| 1 | Iw:LEARN's document files |
| 2 | RLCIw Finance document (January 2005 – December 2008) |
| 3 | RLCIw Finance document (January –October 2009), Iw-PCA Finance document (January – November 2009), and Iw–SSFA Finance document (January 2010 – April 2011) |
| 4 | Iw–3 Finance document (May 2011 – April 2013) |
| 5 | Iw–3 Finance document (May 2013 – April 2015) |

## IW:LEARN Project's Equipment Inventory

| No. | Equipment | Description | Serial Number | Price (when acquired) USD | Price (when acquired) THB | Date of acquisition | Assigned to (person/department using it) | DOC REF |
|---|---|---|---|---|---|---|---|---|
| 1 | Notebook | Acer 3608 NwXCl | LXAT00C0125242759 2ED00 | 966.68 | 37,343.00 | 18 July 2005 | Not functioning anymore | 33/29 |
| 2 | Chair | Chair TK34, black | - | 20.71 | 800.00 | 30 March 2006 | Broken long time ago | 38/48 |
| 3 | Chair | Ferradek E-13A(Lucas2906), red | - | 82.46 | 3,103.00 | 22 December 2006 | Taya Santives | 47/63 |
| 4 | Chair | High-backrest chair, black | - | 113.67 | 3,800.00 | 8 July 2008 | Richard Cooper | 66/05 |
| 5 | Desk | Size 4 feet, grey | - | 59.83 | 2,000.00 | 24 July 2008 | Khristine Custodio Gudczinski's old desk | 66/46 |
| 6 | Monitor | Dell LCD monitor, black | CN-0D540H-72872-86C-045L-A00 | 191.72 | 6,409.30 | 29 July 2008 | Jean Jordaan | 66/62 |
| 7 | Desk | Size 4 feet, grey | - | 56.34 | 2,000.00 | 27 October 2008 | Montakan Chimmuang | 69/42 |
| 8 | Chair | Ferradek E-13A(Lucas2906), red | - | 84.20 | 2,989.15 | 28 October 2008 | Ms.Montakan Chimmuang | 69/42 |
| 9 | Water Dispenser | SANYO SwC-M001HC, white | 0902000292 | 147.76 | 4,950.00 | 25 May 2009 | Iw:LEARN Bangkok office | 76/26 |
| 10 | Conference Speaker phone | Audit Conference phone, black | H60540009248 | 388.48 | 12,947.90 | 4 November 2009 | Iw:LEARN Bangkok office | 82/36 |
| 11 | Desk | Size 5 feet, grey | - | 90.01 | 3,000.00 | 17 November 2009 | Richard Cooper | 82/18 |
| 12 | Notebook | Acer AS3935-844G25MNX333, black | LXPADOX33392100F532000 | 960.10 | 32,000.00 | 18 November 2009 | Montakan Chimmuang | 82/46 |
| 13 | Notebook | Acer AS3935-844G25MNX333, black | LXPADOX33392100F612000 | 960.10 | 32,000.00 | 18 November 2009 | Taya Santives | 82/46 |
| 14 | Monitor | LCD monitor: Acer 20X203HBBD, black | ETLEX0w0219350 0E60C4331 | 119.92 | 3,997.00 | 18 November 2009 | Taya Santives | 82/46 |
| 15 | Cabinet | Cabinet (2 drawers), grey | - | 60.01 | 2,000.00 | 26 October 2010 | Iw:LEARN Bangkok office | 93/62 |
| 16 | Notebook | Thinkpad X201i 3323-L7T | 1S3323L7TR93MXRG | 867.09 | 28,900.00 | 26 November 2010 | Jean Jordaan had bought it from the project since April 2011 | 94/42 |
| 17 | Wireless | Buffalo Wireless N Gibabit | 44065910907324(G) | 93.22 | 2,790.00 | 27 January 2012 | Iw:LEARN Bangkok Team's room | 109/24 |
| 18 | Laptop | Acer TravelMate8481G-2464G32nkk | LXV4U0301113 32CDED1601 | 999.00 | 29,900.00 | 18 February 2012 | Khristine Custodio Gudczinski | 109/30 |
| 19 | Facsimile | Panasonic KX-FL422CX | 2EBWH050914 | 253.82 | 7,800.00 | 25 July 2012 | SEA START's room | 114/52 |
| 20 | Computer | HP Slate 21.5" Touchscreen Monitor | 3CQ3340MQP | 408.94 | 11,990.00 | 19 October 2013 | Used in IwC7 and not being used at present | 211/31 |
| 21 | External Harddisk | HDE 2.0 TB 2.5" WESTERN Elements USB 3.0 Black 3Y | WX61A8406HYK | 106.37 | 3,490.00 | 19 February 2015 | Iw:LEARN data record | 225/7 |