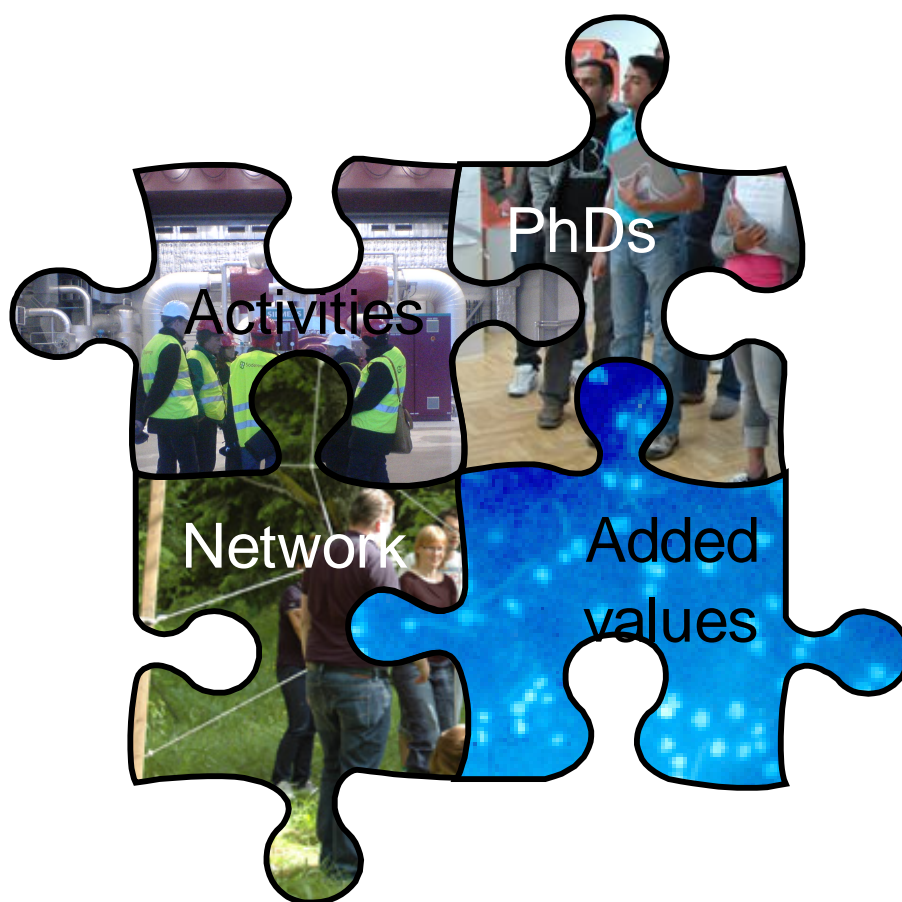


# NL-faculty research schools' joint report 2011

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## **Report by the NL-faculty research schools' study directors:**

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# Executive Summary/Key Findings

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The NL-faculty research schools have been active from mid-2008 to mid-2011. This report provides a summary of the major accomplishments, costs, challenges and additional values during this period. In the final section we present the research schools' visions for the future. All data stem from evaluations and a common register of research school costs, members, participants and activities.

The activities and organizational structure of the research schools have now been consolidated after an initial period characterized by some difficulties of coordination and lack of a common structure. The overall qualities and the development of specific courses of all the research schools have increased over time. Internal and external networks of the schools have both expanded and strengthened, while, at the same time, the coordination and the cooperation between the research schools have continuously improved. The report shows that the research schools have successfully accomplished the overall objectives of the NL faculty initiative. Over 240 student-related activities (steering- group meetings not included) including a wide array of courses, seminars, workshops and symposia have provided training for over 540 former or current NL -faculty PhD students (including around 70 students with double research school memberships). Over 110 PhD theses, representing all research school disciplines, have been completed by research school members.

The schools have collectively engaged a broad spectrum of actors within academia and society (with over 5600 single participations in activities), creating platforms for collaboration, novel course contents and formats, and career-building programs for the research school members. Bottom-up PhD influence, information sharing, long-term planning, integration and networking, career planning, and sector involvement through reference groups are some of the additional values that makes the research school framework cost-effective. Evaluations of courses, questionnaires and the overall values of research schools are predominantly positive, with no clear or coherent negative signal from members. Nonetheless, the report also investigates some of the difficulties and challenges of the research schools. Challenges discussed include the initial lack of organisational structure and strategy and how to further increase the number of students participating in various activities.

Finally, we report a shared vision that a majority of postgraduate education at the NL-faculty can be organized within research schools, since the evaluation demonstrates that it is a cost-effective form of PhD education with many additional values. This vision implies an open attitude towards future changes, new constellations and forms of cooperation. All study directors experience that their efforts have created a qualitative progression of the research schools, which will be a driving force for the challenges that lie ahead.

## 1. Major objectives of the NL-faculty for the research schools

The research schools at the Faculty of Natural Resources and Agricultural Sciences (NL) were established with the aim of:

- i. Providing excellent PhD programs by increasing quality and number of PhD student-related activities at SLU
- ii. Creating and open existing networks within science and society for SLU PhD students
- iii. Involving as many PhD students as possible in the program

## 2. Major accomplishments of the research schools

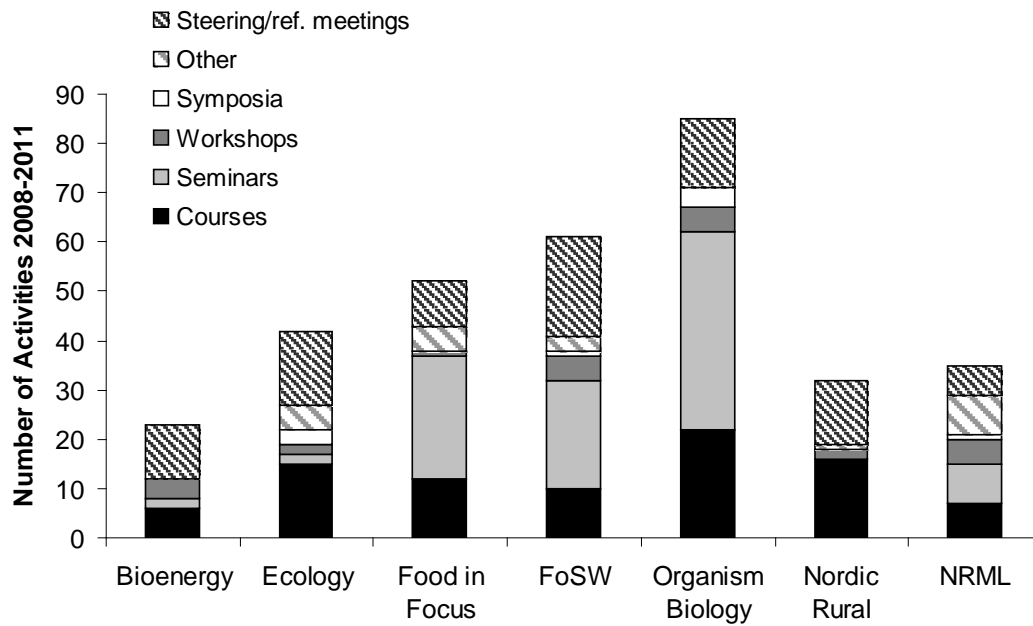
This section summarizes the major accomplishments of the seven NL-faculty research schools during the period April 2008 - June 2011. The accomplishments are organized according to the NL-faculty research school goals (sections i-iii). The research schools' contributions towards the goals of SLU's doctoral degree programme are discussed briefly in section iv. The following section shows that the major objectives of the research school initiative have been accomplished.

### **(i) Providing excellent PhD programs by increasing quality and number of PhD student-related activities at SLU**

Over the 3-year period, the seven NL-faculty research schools have initiated and supported over 240 PhD student-related activities at SLU. The activities are diverse and have provided rigorous training for over 540 former or current NL -faculty PhD students (including around 70 students with double school memberships). Approximately 4000 HECs have been awarded within the research school initiative. The activities cover both specific and interdisciplinary subject areas; over 88 PhD courses, 99 seminar activities, 24 workshops, 9 symposia, many other activities and over 88 research school meetings involving steering group members and advisory boards have been conducted (Figure 1).

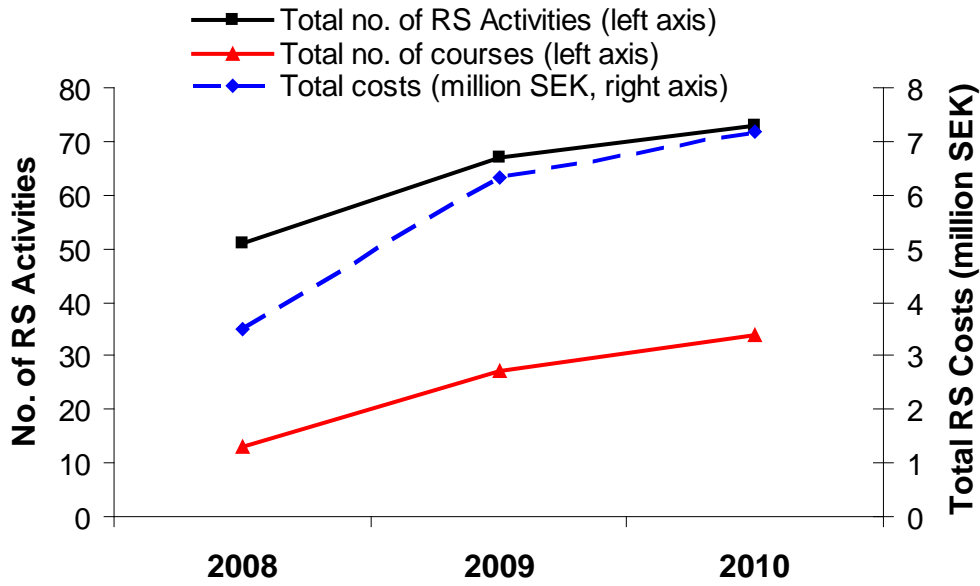
Larger schools with many members (Ecology, FoSW and Organism Biology) have generally accomplished a greater number of activities compared to smaller schools (Bioenergy, Food in Focus, Nordic Rural). This is not surprising, given the greater number of students and wider subject disciplines. Also, a substantial proportion of activities arranged by FoSW and Organism Biology are seminars (e.g. lunch seminars).

The most important contributions of the research school initiative mentioned in the questionnaire (filled out by members of Ecology, FoSW, Food in Focus and Organism Biology) were: networking, courses and seminars, and the opportunity to influence courses. Bioenergy's members considered networking, multidisciplinary and facilitated progression in the field as the most important contributions.

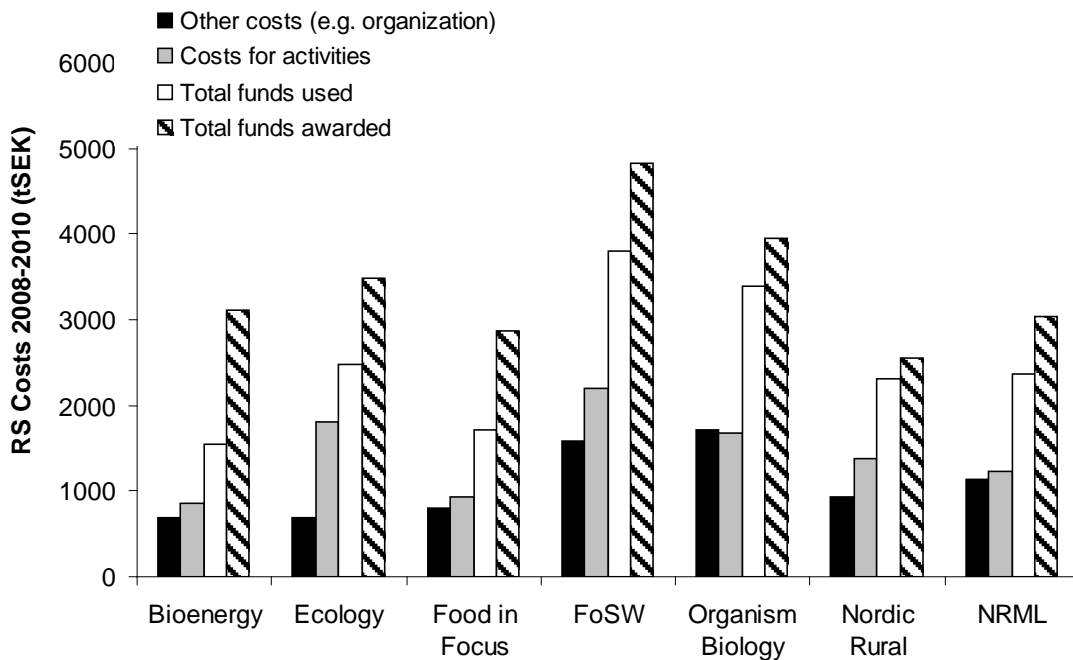


**Figure 1. Activities:** Preliminary data of the total number of research school activities accomplished by the research schools during April 2008 - June 2011.

Most of the research schools were new and started gradually during the spring semester 2008. This late start is reflected both in the number of activities arranged and the limited utilization of the funding that was granted for 2008 (Figure 2). Over time, as work progressed, the research schools increased the number of activities, which is reflected by the increased costs (Figure 2). On average 75% of funds awarded during 2008-2010 were used by the research schools. However, the total funds awarded and funds used differed among research schools (Figure 3). On average 55% of the schools' costs 2008-2010 were spent on activities and 45% on other costs such as organization, although the proportions differed among schools (Figure 3).



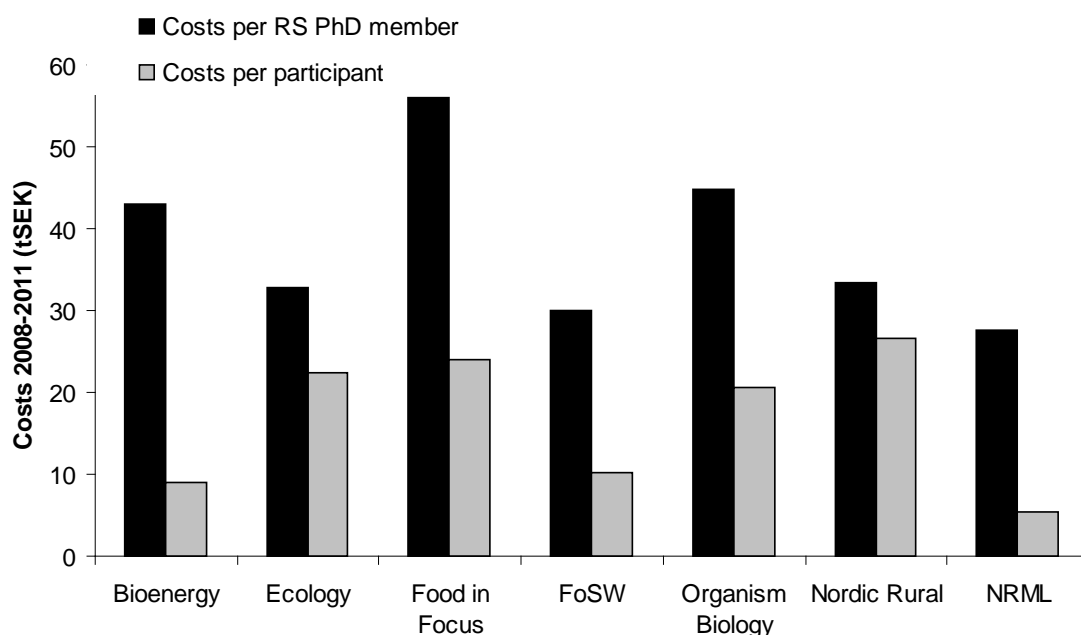
**Figure 2. Development of activities organized (left axis) and funds used (right axis) by the NL-faculty research schools during April 2008-December 2010.**



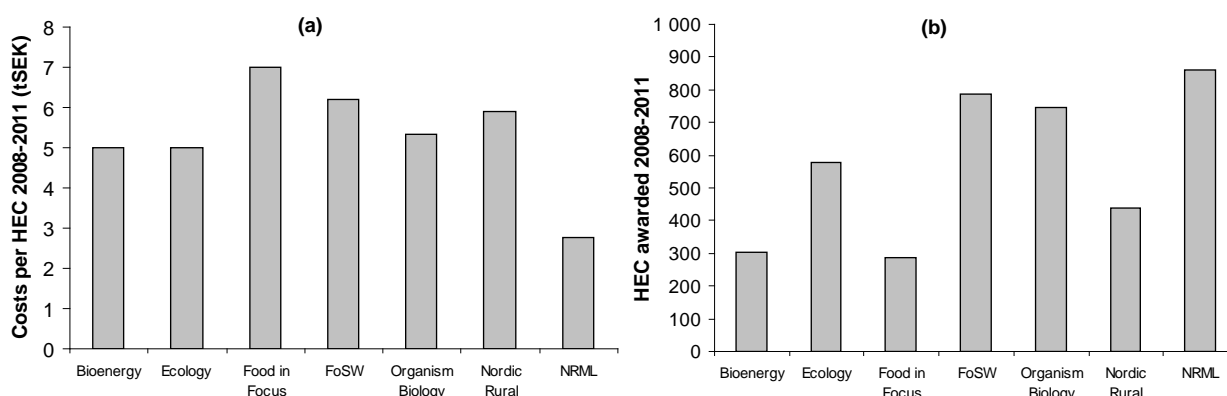
**Figure 3. Total costs April 2008-2010:** Preliminary data of funds (tSEK) used for non-activity costs such as organization (black bars), activities such as courses, workshops, seminars, symposia etc (light grey bars) and total funds used during April 2008-December 2010 (white bars). Striped bars represent total funds awarded to the respective research school during April 2008-2010.

Costs per research school PhD member and activity participant (Figure 4) and costs per HEC awarded (Figure 5a) differed between schools. The average total cost per research school

PhD member over three years was 38 tsek (double memberships of approximately 70 members not accounted for). These costs include only funds awarded to the research schools. We consider this cost effective in the perspective of a four year PhD education which includes 1 year of courses. Costs per PhD participant were generally lower. This is not surprising, given that this category includes both PhD research school members and PhD non-members participating in the activities. A total of 3999 HECs have been awarded within the research school activities (Figure 5b). The average number of HEC awarded per PhD member was 5 HEC, and varied substantially between schools from 2 to 7 HEC.



**Figure 4. Costs per member and participant:** Costs (tSEK) per research school PhD member and activity participants (including both research school members and non-members).



**Figure 5. (a) Costs per HEC awarded** within the research schools from April 2008 - June 2011. **(b) Number of HECs awarded** within the research schools from April 2008 - June 2011.

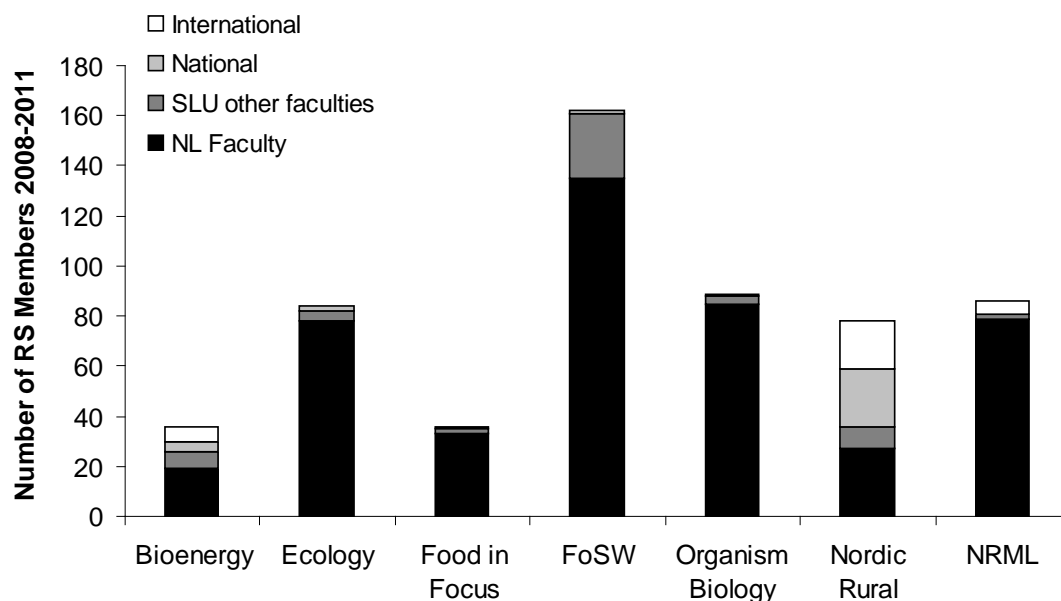
Within the research schools, the quality is continuously ensured through yearly reports, self-evaluations, close collaboration with and involvement by steering groups and advisory boards. PhD student input is achieved by course evaluations, active student participation in steering groups, mail listings, and open-access websites. The study directors now collaborate efficiently via several shared activities, the development of a common register for members and activities (basis for the data in this report), a joint questionnaire to research school members for evaluation, monthly meetings for directors of studies and a common format for course evaluation. All these developments are likely to have improved organisation and communication, thereby improving the overall quality of the research school activities.

A large number of courses, including state-of-the-art methods courses and subject courses with high scientific value as well as interdisciplinary- and broader courses with high societal value have been arranged.

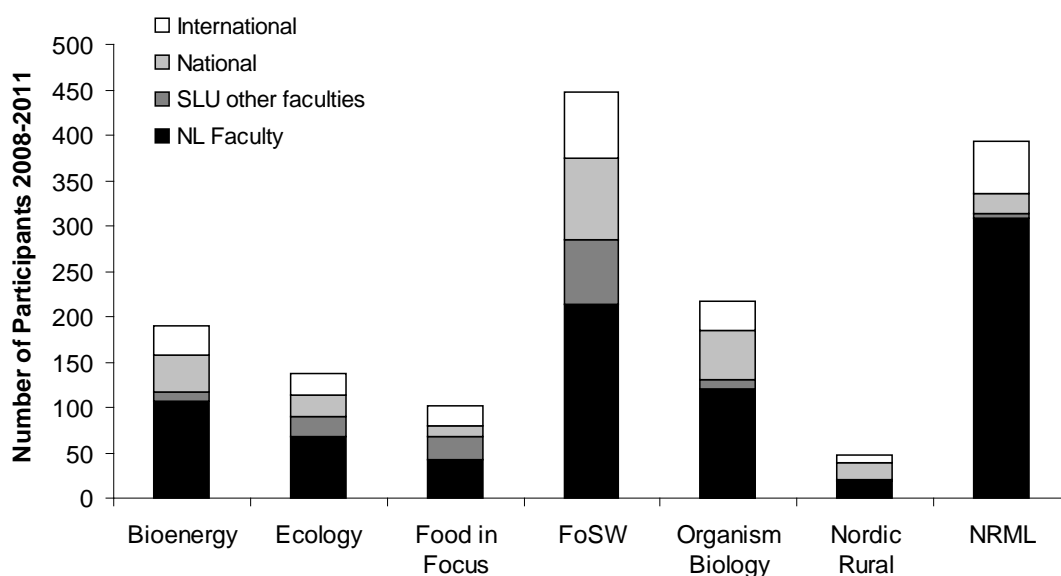
The general quality of the research school initiative was rated between 4.3-4.7 (scale 1-5) in recent questionnaires. In addition, the responders generally considered the goals of the research school to be fulfilled (in many cases ratings above 4).

**ii) Creating and open existing networks within science and society for SLU PhD students**

Networks within science and society are considered essential. This is illustrated by the research schools' extensive contacts with stakeholders, national and international research communities in the majority of the accomplished activities. Over 5600 single participations in different activities have been organized. Many younger researchers and post docs have been teaching on new courses. A number of information days, study visits and workshops have been organized for PhD students, to create networks in society extending outside academia. Information about the NL-faculty, the research schools and individual PhD projects has been spread to stakeholders and the public through homepages, symposia, workshops and excursions. All schools have homepages on the faculty PhD education/research school web page. The schools have created national and international collaborations for many PhD students through members, participants (all people that actively participate in activities) and organizers (Figures 6-8). Last but not least, the process of creating new contacts between alumni networks, research groups and departments has been considered very useful by the research school members.

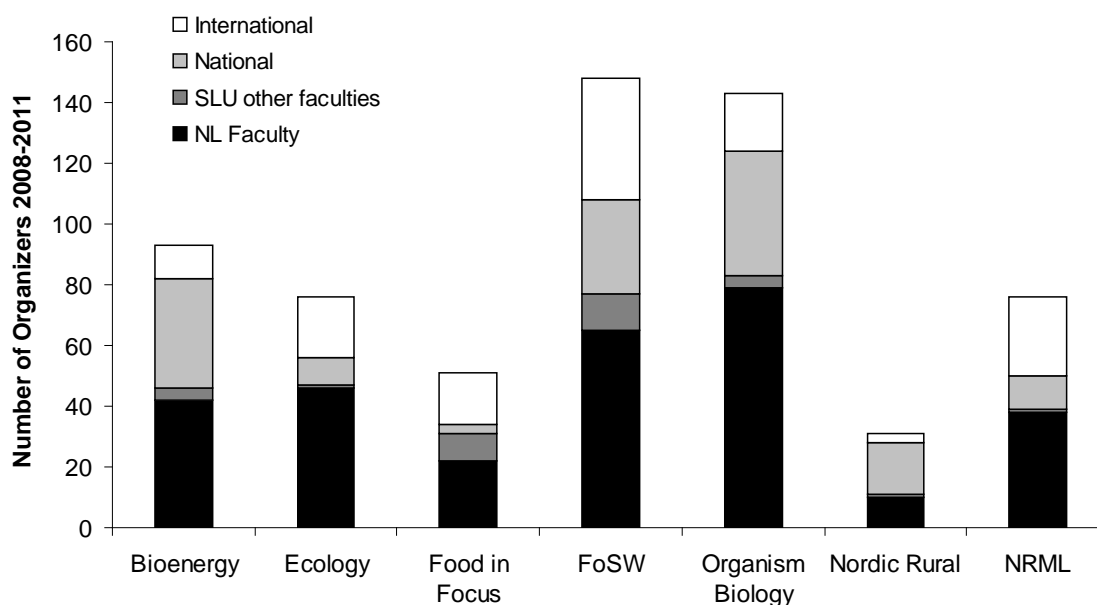


**Fig. 6.** Total number of former and current research school members from the NL Faculty (many PhD students with international background are included), SLU (other faculties), and other universities in Sweden and internationally.



**Figure 7.** Total number of participants (members and non-members) in research school activities from the NL Faculty, SLU other faculties, and other universities in Sweden (national) and internationally.





**Figure 8.** Total number of organizers/teachers/speakers engaged in research school activities from the NL Faculty, SLU other faculties, and other universities in Sweden and internationally.

### (iii) Involving as many PhD students as possible in the program

During the period April 2008 – June 2011, over 560 PhD students, including over 420 NL-faculty PhD students have been members in the research schools (Figure 6). These figures, however, are based on summaries where approximately 70 members with double memberships are counted more than once, and can also be related to our current 364 PhD students at the faculty.

### (iv) Contributions towards the goals of SLUs Doctoral Degree Education

Over 114 research school PhD students have successfully obtained their Doctoral Degree during the NL-faculty research school initiative 2008-2011. The research schools have played an important role in:

- providing additional means and resources for conducting high level training courses
- enabling specific degree programmes and research groups to invite renowned scientists
- provide both depth and width for SLU PhD education through courses on research methods in general and methods in specific fields of research as well as on general aspects of research and interaction with society
- awarding approximately 4000 HECs in subjects of education at the third level of higher education
- made it possible for scientists, students and the general public to converge and discuss beyond the usual disciplinary boundaries
- renewing interest and engagement of senior scientists

- engaging students in research analysis and synthesis and in independent, critical examination and assessment of new and complex phenomena, issues and situations
- providing opportunities where students can present and discuss research and results in dialogue with the research community and society in general, in both national and international contexts

### 3. Major difficulties and challenges of the research schools

The initial period of the research school program was characterized by some difficulties of coordination and lack of a common structure. This caused research schools to invest considerable time and money into solving problems, e.g. regarding home pages, lack of common web portal, lack of financial tools and instructions, resulting in inefficiency. In the long-term, this was not entirely negative since it allowed the research schools to organize and develop in different directions, learning from a wide array of positive and negative experiences. At present, when the research schools have started to collaborate more closely, they benefit from their shared experiences.

Many of the research schools have had difficulties in attracting a reasonable number of students to certain activities, especially to generic courses. It is essential that this problem is overcome as these courses represent an important part of the goal of the research school, i.e. to provide both depth and width in the SLU PhD education. This risk can be countered by efficient and strategic advertisement of courses, by achieving a reputation of running excellent courses, and by close collaboration between the research schools, and external departments and universities.

Several of the research schools have not used all the funds awarded, especially in the initial period (Figure 3). This is partly the result of inexperience and difficulties to estimate costs for running new courses, conferences, events, organization etc. However, please note that the research school activities and costs are not finalized, thus, most of the remaining funds will be used in 2011.

### 4. Additional value of research schools

The research schools are important for the overall PhD education at the NL Faculty; they are the platform for a coherent, up-to-date program of PhD-courses, workshops and seminars. In the responses from a recent joint questionnaire (so far completed by Bioenergy, Ecology, FoSW, Food in Focus and Organism Biology) members considered the following added values associated with the research school: high quality of courses, high involvement of students, accessibility and international aspects. They also mentioned that seminars spurs ideas for own research, increases supervisor and student activity as well as multidisciplinary within their own subject field. The schools have engaged a broad spectrum of actors within academia and society, creating platforms for collaboration, novel course contents and formats, and career-building programs. The involvement of renowned international experts in courses is appreciated by the PhD students and has contributed to course quality enhancement. PhD-students also appreciate the bottom-up approach of the

research schools' for planning the course programs and workshops. No clear or coherent negative view of the research schools' work have been put forward by the research school members, however, this does not mean that activities and organization of individual schools cannot be improved.

The research schools provide a cost-efficient way to create and promote quality and continuity (i.e., a long-term foundation for PhD education); we have developed criteria for course plans, budgets and evaluations and instructions for organizers of activities. In addition we now have a common format for our membership registers, which enables us to summarise and compare data between research schools, and monthly meetings to coordinate research school work. The study directors have developed organisational skills and increased their capacities for co-operation across subject disciplines and departments.

Questionnaires also demonstrated the important role of the research schools in facilitating networking in academia and society by providing;

- *a forum for scientific and social dialogue among PhD-students, post-docs and other researchers*
- *a forum for collaboration and dialogue with private and public sectors*
- *a forum for collaboration and dialogue across subject disciplines within SLU*
- *a forum for international collaboration and dialogue*
- *a forum for communicating scientific work to society at large (e.g., media training, popular-scientific writing)*

## 5. Visions: research schools in the future

**The research schools have a common view of how the NL-faculty research school initiative can be developed, regarding continued quality improvement, synergy from collective efforts, openness to new constellations and forms of cooperation and a continued and stimulated bottom-up initiative. One important part is the shared vision that a majority of postgraduate education at the NL-faculty can be organized within research schools.**

Our visions can be achieved by increased cooperation and exchange with universities in Sweden and abroad. The research school programs will be improved by organizing more interdisciplinary activities, further interactions with society, large-scale events such as symposia, and by flexible forms of learning (e.g., video conferences and on-line courses). We expect to see more synergistic effects from collaborations between research schools, both in terms of organization and content. A continued and stimulated bottom-up initiative, which is one of the strengths of the current initiative, will be prioritized. The schools are open to an evaluation of possible new constellations and forms of cooperation, and provided that funding is available for a coming period we are able to provide more specific examples of how to develop the NL-faculty research school programs.

*/The NL-faculty research schools' study directors*