

# The Effectiveness of University's Strategic Plan for Sustainability through Collaborative Platform's Deliberation Matrix

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**Abstract**—The paper focuses on the significance of the university's sustainability strategic plan and emphasizes the usefulness of the collaborative platform-based deliberation matrix. It will equip the university's leadership to handle impending tactics and challenges with the sustainability of the university's strategic plan. The study addresses the significance of a set of reference points that will precede operational activities for multi-stakeholder multi-criteria evaluation on the optimal standards of Sustainable University, as well as potential action for the strategic blueprint of Sustainable University. It makes reference to the university's sustainability strategy plan's effectiveness through a collaborative platform and deliberation matrix. The paper outlines the conceptual framing of a sustainable university by implementing a strategic plan over the collaborative platform and deliberation matrix. Optimistically, these will be a milestone in higher education; a pathway to prepare for the University's upcoming implementation of its sustainability strategy. In fact, the collaborative platform and deliberation matrix both are enhancement needles for institutional cooperation to the complete world.

**Keywords**—Sustainable strategies, institutional cooperation, multi-stakeholder multi-criteria assessment, collaborative platform, innovative method and tools.

## I. INTRODUCTION

THE paper highlights the direct association between university strategic plans for sustainability and a collaborative platform. It recommends an innovative pathway as a helpful approach for addressing effectiveness of university strategic plans for sustainability through a collaborative platform faced by higher education institutions, e.g., University. There are three vital issues of strategic plan for sustainability of the university e.g., Excellence in Education, Teaching and Learning; strengthen the University's research profile; strengthen the University's impact on economic and social development added to the University's Domain [12] based on innovation. In fact, the attentiveness of these issues, educators and researchers influenced the university authority to prepare upcoming significant challenges against the backdrop of dominant global trends centered on the university strategic plan for sustainability and many initiatives have been recommended at the university level sustainability. Most of the universalities strategic plan concept highlighted to the instantaneous and balanced

progress in three dimensions or triangle issues (Excellence in Education, Teaching and Learning; strengthen the University's research profile; strengthen the University's impact on economic and social development based on innovation), those are totally codependent and interrelated to meet the sustainability requirements of a university. Likewise, the development of a common institutional platform will facilitate the sharing of knowledge of strategic accomplishments, gaps, and necessary actions for creating a sustainable university through the deliberation assessments process.

The proposed ePLANETe blue can mostly be utilized to address most of the challenges of sustainable campus [1]. It is a digital archive of the intellectual product created by REEDS Research group for the purpose of best practices of education, sustainability, and innovation for the faculty, research staff, students, communities and stakeholder of an institution and accessible to end-users both within and outside of the institution with few if any barriers to access [2]. It is also a digital knowledge platform that can be decertifying the online deliberation, experimental assessment data collected by institution members during assessments and observations that support to the scholarly activities of education, research, and innovation [3].

### A. Research Aim

The research goal to outline the effectiveness of university strategic plans and identify the innovative platform includes method and tools for best practice of sustainability, within a vision of sustainable university. The goal also is to demonstrate the best strategic paradigm that relevance to creating opportunities for sustainable world renowned university. The paper addresses the question of how do university accomplish the efficiency of strategic plan for sustainable university with a collaborative platform that integrated excellence in education, teaching and learning; strengthen the university's research profile; strengthen the university's impact on economic and social development based on innovation. It is related to the adoption of new innovative platform includes method and tools of deliberation matrix, and technologies for the assessment of the actual sustainability scale of the university, and fulfillment of the strategic gap from multi-criteria and multi-actor analysis.

### B. Source and Methodology

This paper uses collective action method, existing works, and collaborative project capabilities of the ePLANETe

system to investigate the mechanisms and strategic plan of a sustainable university that accommodates the ePLANETe collaborative platform with innovative kerDST deliberation matrix.

## II. LITERATURE REVIEW

The higher education organizations especially universities play a key role in sustainable development [4]. The sustainable university model presents a systematic procedure for how people responsible for sustainability initiatives within academic institutions may obtain their initial momentum to get started and to continue to advanced steps in the process of becoming sustainable [5]. However, it is important to understand that currently, in most universities, insufficient prerequisites exist for the creation and adherence to all the phases of the model. That's why, it is not envisioned. For these circumstances the actions of the University should be taken initiatives in these issues and possibly create significant impacts on education, research and innovation strategies. In line with this point of view, the current practices of interdisciplinary and of incorporating the environmental, economic, and social dimensions of sustainable development into university's academic programs, research networks, and innovation strategies are accelerating the shift towards the sustainability paradigm [6]. "Universities, in particular, are essential in the context of the SDGs because they can both equip the next generation with skills, knowledge, and understanding to address sustainability challenges and opportunities, and perform research that drives innovation and advances the sustainable development agenda" [7]. Besides nowadays, most of the parts of university, the education, research and innovation transformed to the digital platform for implementation of strategic plans of sustainable universities. We need an integrated or collaborative space for sustainability of education, research and innovation. The universities have increasingly recognized that an integrated or collaborative platform is an essential infrastructure for effectively carrying out university sustainability strategy plans. Our proposed ePLANATE blue is that type of integrated or collaborative platform, which is capable to increase dynamic efficiency of university's strategic plans for sustainability by the operative ways.

## III. THEORETICAL BACKGROUND

The paper presents the concept of 'ePLANATE' as a collaborative platform for multi-stakeholder and multi-criteria assessment of effectiveness of strategic plans for sustainable universities by KerBabel™ Deliberation Matrix [3]. By emphasizing the importance of sustainability of universities, the paper makes a contribution to the literature on sustainability of the universities. We will suggest a collaborative framework for HERE appraisal that is the fruit of extensive experience with deliberative multi-criteria frameworks and with internet-based platforms for collaborative work and social networking [2].

We adopt the view that, for a wide variety of "stakeholders"

in society — including decision makers in university's administration and management roles — learning about strategically governance challenges can effectively be achieved by participation in procedures (real or simulated) of selection and deployment of indicator systems for an analysis activity [3]. Examples are the analysis by stakeholders (including management, employees, shareholders, commercial partners and communities) of the university's strategically efficiency performance against specified corporate social responsibility criteria [11] by the KerBabel™ Deliberation Matrix.

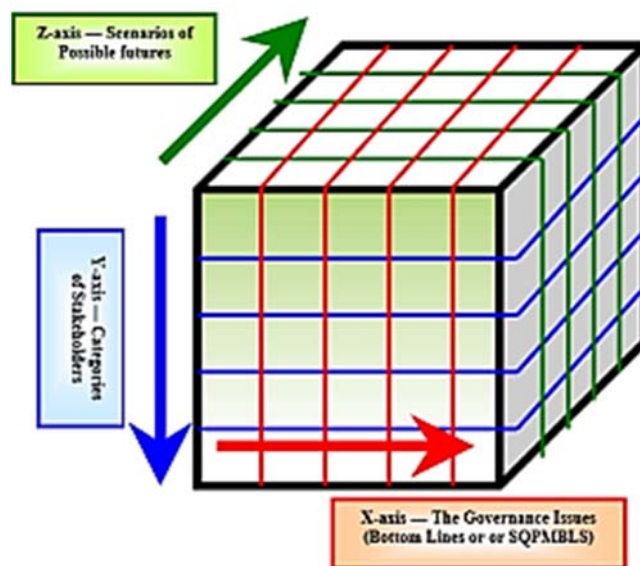


Fig. 1 ePLANETe KerBabel™ Deliberation Matrix

### A. Framework of University's Strategic Plan

In the literatures and own observation, we can categorize the strategies that universities are currently set-up into groups based on their interrelationships and influences, such as: **Group 1:** Sustainable Education (Excellence in Education, Teaching and Learning), **Group 2:** Research and **Group 3:** Innovation (Economic and Social Development).

Mostly, we have found nine common issues on challenges of sustainable education, research and innovation [1]:

- Sustainability of Higher Education (HE) e.g. Efficiency and competitiveness;
- Sustainability of Value creation strategies in HE e.g. Globalization;
- Universities ranked – increasing competitiveness;
- The technology facilitation mechanism for building effective partnerships for education and research e.g. ICT as tool for research and 'blended' modes of teaching
- Promoting Education for Sustainable Development e.g. Eco-innovation, Mediation, and Sustainable Management;
- Inclusive & equitable quality education and long-life learning for all;
- Capacity building for women's empowerment e.g. gender equality;
- Innovation for Green Growth e.g. Sustainable campus: Green campus;

- Transformation of education e.g. knowledge platform, knowledge economy, and knowledge society.

When a university addresses social responsibilities going beyond its traditional mission, it has to consider the financial implications and potential tradeoffs [12].

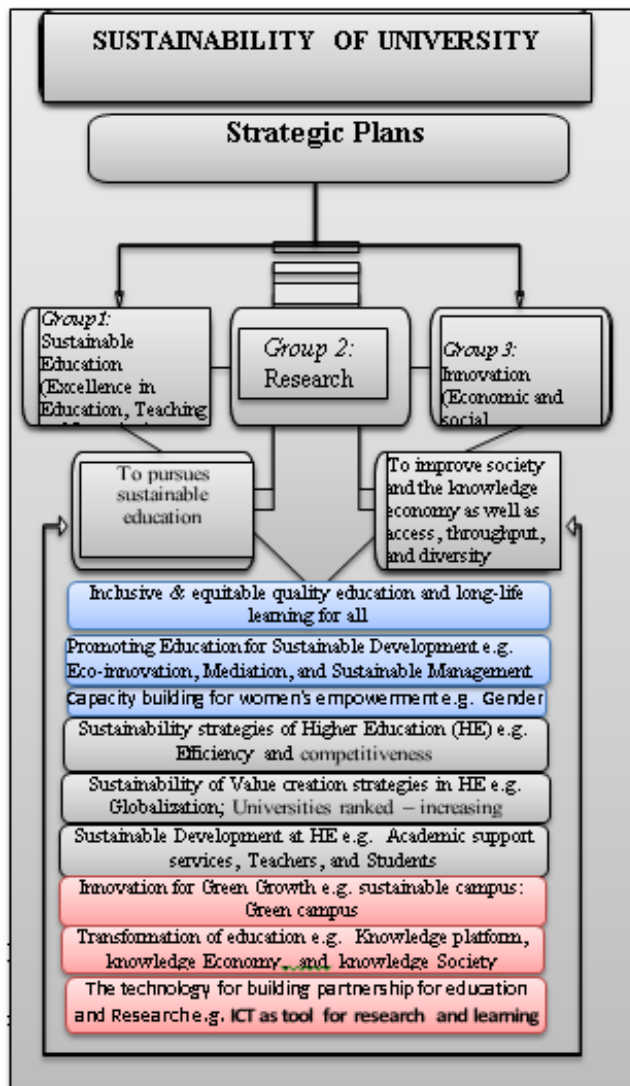


Fig. 2 The University's Strategic Vision for Sustainability

The “ePLANETe blue” collaborative platform is intended to assist the identification of best practices at specific levels of action to the strategic plan, and to encourage knowledge exchanges in “virtual community”, and thus it is to improve sustainability of education, research and innovation performance through the engagement of collaborative activities of different sorts [9]. In the process stakeholder involvement plays an important role and the stakeholders, as individuals, have influences on the decision making [14] by ePLANETe KerBabel™ Deliberation Matrix.

*B. Framework of Deliberation Matrix: The System' ePLANETe' - KerBabel and Online kerDST*

The methodological frame adopted to characterize four

evaluation methods [1]: (1) the *objects* of evaluation attention (e.g., institutions, sites, strategies, actions...); (2) the framing of the *performance goals and challenges*; (3) the identification and roles of the different “*actors*” or *stakeholders* in the evaluation process; and (4) the type of *indicators* or “*signals*” of *performance*. By observing these four dimensions, we can characterize the process for selecting, recruiting, and integrating indicators in to an aggregated indicator or score [3]. Developed by KerBabel research team, the logic of the 3D deliberation matrix allows for a didactic representation of the decision processes and outcome made by each category of stakeholders for each option or scenario being evaluated to quality performance issues [10]. The scope of quality performance issues, the categories of stakeholder, and the list of objects to be evaluated and compared must be determined by KerDST [9] user, who builds the issues outline as the designated issues owner for counselling support.

In the 2006 version of KerDST [9], it is essential to specify a “*small number*” of fundamentals along each of these three axes [1], [3]. The limitation to a “small number” (typically between 3 and 8) is partly for ergonomic reasons of on-screen conception [3]. It is justified also on cognitive terms: individuals typically can “hold” up to 5 or 7 objects as separate items in their minds and building a deliberation with more than 8 elements along a single axis becomes unwieldy both on-screen and in cognitive terms that is constraint to “small numbers” along each of the structuring axes for “building the problem” can, in principle, be relaxed by introducing internal structure along each axis [3]. For instance, one strength offers a hierarchical construction of “top goals” and “subgoals” for categorizing the quality-performance criteria [2]. We will return the question of *interior construction* along each of the three constitutive axes, but focus here on the *roles of the actors* in the evaluation process and the mobilization of indicators to compose the evaluation [1], [3].

In the kerDST, process of ePLANETe’s (collaborative platform) provides for three main phases or forms of participation by real persons as “actors” in the evaluation [10]: The first phase of stakeholder participation is to “build the problem”, a process that, one way and another, culminates in the definition of a 3-D array: (1) the key stakeholder or social actor classes, (2) the relevant spectrum of performance issues and (3) the range of evaluation objects (e.g., HE establishments, business strategies, industrial sites, projects, territorial development scenarios, technologies, investment options...) to be evaluated. Many people may participate in conversation before or throughout the actual process of building the problem via the online deliberation support tools, even though one person will be empowered as a special KerDST User to be the problem holder. Second coat is for those who, in their capacity as legislators representing a group of stakeholder, pass judgement on each evaluation alternative e.g., as a site or scenario in relation to each performance criterion or issues. Each stakeholder should provide a judgement (satisfying, poor, unacceptable, etc.) of each alternative scenario in connection to each of the important

concerns or decision matter by focusing on each cell of the Deliberation Matrix. In these procedures, one obtains for each Actors Class or Stakeholder, a layer of the matrix that consists of rectangular array of cells where each row indicates (issue by issue) the assessment provided by a particular class or stakeholders class for subsequent options or scenarios. The ability to expand the evaluation undertaken and motivate each cell level judgment by reference to indicators constitutes the third types of stakeholder participation. This method can be applied to a variety of surface, such as the range and weighting of indicators for a ‘basket’ of indicators within a ‘cell’ of the DM, as well as user community assistance in creating lists or banks of indicators that are appropriate for the current challenges.

Our chosen approach is grounded in participatory multi-criteria assessment methods that, in different ways, have been developed and deployed since the 1990s in a wide variety of policy fields [2]. In particular, we draw on work by O’Connor and Spangenberg [8] combining methodological and empirical components, which has outlined operational procedures for indicator-based sustainability assessment procedures (henceforth SA). They argue for sustainability assessments to be organized in a parsimonious but multi-level way. Sustainability assessment information can be placed at three main levels (Fig. 2), which are articulated by moving “upwards” and “downwards” relative to a deliberately derived set of SQPMBLs (*Sustainability Quality-Performance Multiple Bottom Lines*) [3].

LEVEL	OUTCOME
Characterising “Sustainability”	Agreement about vision of “Sustainable Development” or “Governance for Sustainability” as the pursuit or achievement of a coevolution of interdependent systems respecting simultaneously multiple “bottom lines”.
Articulating relevant “Bottom Lines”: Sustaining of What, Why and for Whom?”	Agreement by Stakeholders on the set of Performance/Quality considerations that are affirmed as “Bottom Lines” for the specific policy situation or class of management challenges being addressed.
Proposing and Mobilising Baskets of Indicators of Quality or Performance	Consensus about baskets of appropriate indicators to be mobilised in each category of SA, as a function of issues, stakeholder diversity and the range of sites, scales and options under discussion.

Fig. 3 Framework for Deliberative Sustainability Analysis (2007) [3]

According to the proposed framework in purpose of a sustainable university which is only viable way to achieve a systematic direction for long-term development of strategic plan and collaborative platform is to address the challenges and solutions of sustainable university. The ‘open networking’ scenario and platform are the best ways for practicing the sustainability of the university. In this respect, university accounted for more than a third of all voluntary commitments made at RIO+20, with commitments from over 300

universities from around the world [16]. Through its strong association with the united nation, universities provide a unique interface between university science and policy making. All university can freely join the network that is part of the association commitments. To establish the sustainable campus, we need to exercise green growth framework; share knowledge, information and experience feedbacks relating to territories innovation strategies and their implementation modalities via knowledge mediation gateway.

They have interests in the objectives of the project and will be affected by the consequence of the decision taken [15]. By involving the stakeholders, the decision-maker can have a better understanding of the objectives of the different parties, which typically leads to higher implementation acceptance and lower chances of project failure [16].

The university believes in its ability to federate public and private actors of its territories to develop innovative projects in sustainable development and to build together an open-minded platform to meet the 21<sup>st</sup> century challenges of education, research and innovation that can be open networking and knowledge platform as solution. In addition, the university faces many challenges, including how to identify and train for innovation while taking into account sustainable university’s requirements. This is a major concern, as innovation, education, and sustainability are complex issues that require attention to the rapid dynamics of the way the knowledge is produced and transfers today. The increasing networking of the university and the harmonization of systems allow university’s communities to choose their sustainability target and design their own sustainability framework. Our proposed knowledge mediation gateway ‘ePLANETe’ is a multi-faceted approach to the sustainability practices and it is a good example on how this can be articulated for the strongly connected case of, Education, Research and Innovation. It is also an open networking solution that helps us resolve the new issues or challenges of education, sustainability, innovation as perspective of knowledge economy and society. It also works as a knowledge transformer like the up-to-date dot technology.

#### IV. METHOD, RESULT AND ANALYSIS

##### A. Online Deliberation Support Tools- KerDST: Multi-Stakeholder with Multi-Criteria Analysis

In this system, exercises or tasks are organized using a ‘grid’ or arrangement in three dimensions, structured by specifying selected problem:

- ✓ Assessment/Government issues: few noticeable quality/performance issues
- ✓ Main types of actors or stakeholders: the pragmatic delineation of ‘interest’ and collective identity
- ✓ Political options or possible future prospect: small number of options for actions and decision scenarios

**KNOWLEDGE SOCIETY AND ECONOMY**

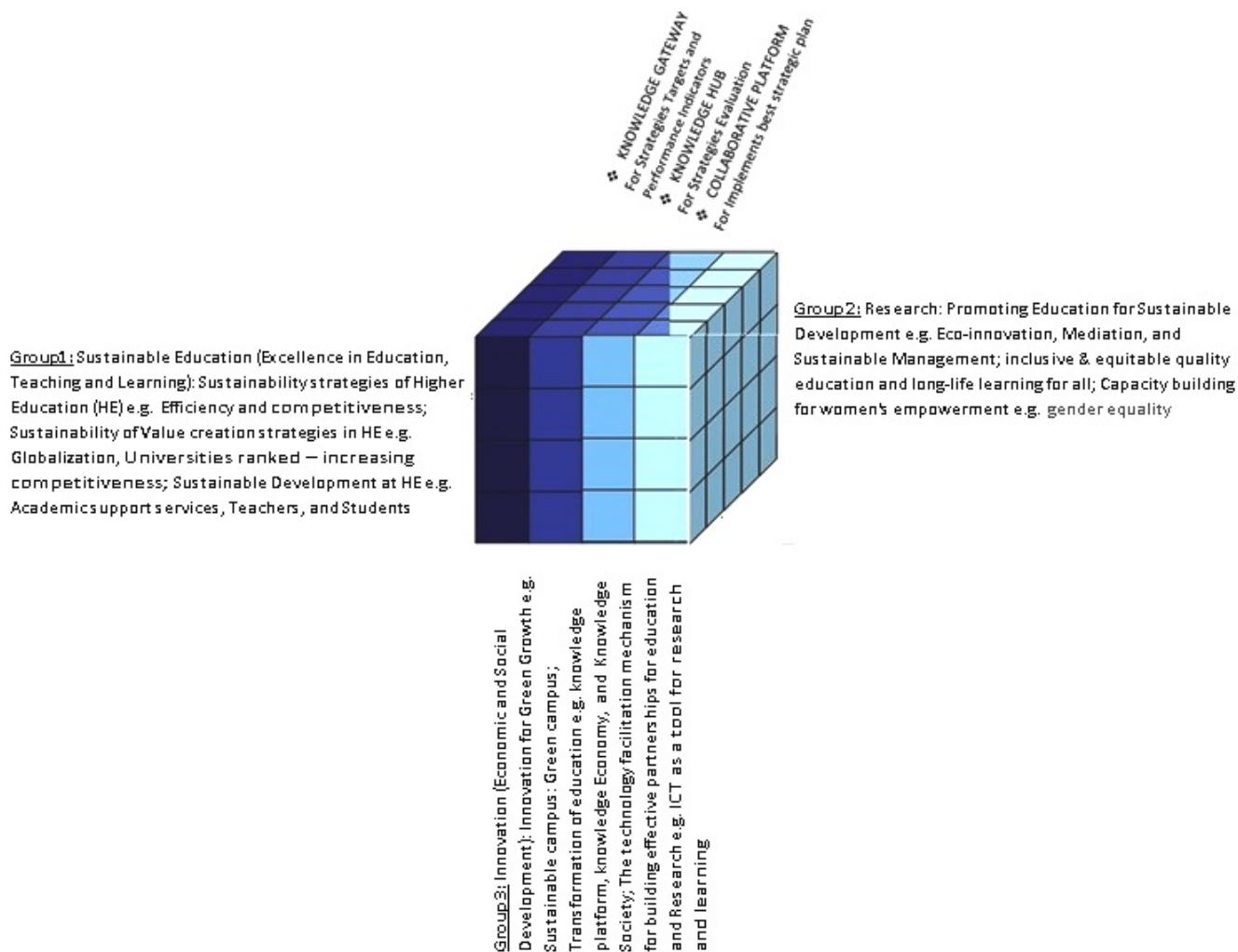


Fig. 4 Framework for Strategic plan and knowledge platform of the University

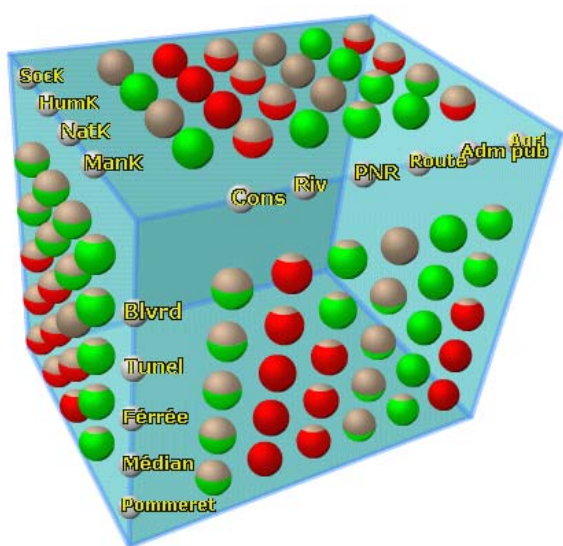


Fig. 5 KerDST: Multi-Stakeholder with Multi-Criteria Tasks [3]

If the task is to evaluate a specific activity or to compare several situations, then the user can specify a site or sites rather than scenarios [10]-[12]. From the above three aspects of the KerBable deliberation support process, we have understood that the forms of genuine stakeholder engagement are intrinsic to the process of mobilizing indicators and evaluating or reporting evaluation results at the unit level and then aggregated at a higher-level connection [12].

If we continue to use KerDST [13] as a methodological case study, we need to examine more carefully the interplay between assessment structures and participant contributions. In 2006, the KerDST online deliberation support tools integrated two main functions into a basic framework for comparing Multi-Stakeholder and Multi-Criteria Assessment [2].

First, as already mentioned, are the mobilizing indicators by way of a base for the *cell-by-cell* judgements. These indicators are listed and accessible online ‘ePLANETe’ interfaces with the deliberation matrix in a matching “KerBabel™ Indicator Kiosk” [3]. In this sequence of participatory assessment, user

of the deliberation matrix can participate to the design of catalogue [12].

The second is the acceptance of multiple participants as member of the online deliberation community, each of whom is associated with one of the stakeholder categories specified in the deliberation matrix for the social choice problem under consideration and who contributes to the formation of composite judgement for the CELLS of the DM corresponding to that specific stakeholder category [12]. We identify the four primary ways to utilize the potential of the KerDST system by combining these two qualities. The tabular arrangement that follows summarizes: “The simplest method is “colouring in the cells” by single representative of each stakeholder category of by a single expert acting on behalf of all stakeholder categories for a qualitative multi-stakeholder multi-criteria assessment of a situation or option for action (this is Variation ‘A’ in the schema)” [2]. This opens up naturally [12]: towards variation ‘B’, where multiple participants contribute to a composite judgment of each issues e.g., each CELL. On the other hand, towards variation ‘C’, a single expert acting on behalf of all stakeholders creates a ‘non-participatory’ evaluation for supporting societal goals [3]. Noted that the “default option” suggested for color codes is RED for bad, YELLOW for moderate, and GREEN for good [2].

*B. Auto Evaluation Method of Strategic Demonstration on Sustainability [9]*

We have developed and proposed an innovative way, tools and approach of analyzing strategic sustainability of university benchmarking university of UVSQ and UPSalay by the ‘ePLANETe’s Deliberation Matrix. There are 3 axes in the deliberation matrix that applied for the auto evaluation process [13]:

- There are four perceptions: [8] (A) Research/Means; (B) Research/Objects; (C) Education/Means, (D) Education/ Objects [1].
- Performance Issues: built using crossings of the triangle: Education, research and innovation [12].
- The objects are organized and compared around three themes [12]: It is necessary to choose from 1 to 5 indicators to assign a value, a subjective weight, and a comment (if possible) in order to reach a conclusion [1], [3], [10].
- ✓ Choose "Dark green aimed at "Strongly in Favor"
- ✓ Choose "Green" aimed at "Favorable"
- ✓ "red" aimed at "Poor"
- ✓ "Orange" aimed at "Medium"
- ✓ "white" aimed at "Do not know"
- ✓ "blue" aimed at "Not Applicable"

Quantitative or qualitative indicators may be used to express one’s judgment in order to be more explicit about the evaluation process. The indicator is used in its broadest sense, which is to say it encompasses all information related to the perceptions that has a stake in expressing its opinion. In this case, the meaning that the indicator allows to prove in order to issues the judgment is what matters, not its quantification and qualification.

For a particular perception, the first level of interpretation presents the findings of the assessment of all the comparable objects and the stakes (slice of the matrix) in the following manner: There will also be a ‘slice ‘of the matrix for other categories of actors. At the second level of interpretation, we will be able to identify for each perception/objects/issues crossing the indicators and the arguments used to make the judgment (see Fig. 9 on how to compose a judgments) [3].

We can analyze the results as follows. For the object of comparisons 1, we obtain the following judgments at the first level of interpretation, see Fig. 10.

In addition, we will have access to all the crossed perception/issues as the second-level identifiers. We note the criteria and justification that were employed in the judgments.

*C. Outputs of the Analysis Process*

Two output results of the automatic are presented (Fig. 11) in the ‘ePLANATE’ System. The general views of the result of the auto evaluation are a multi-colored picture, respectively for the Strategic Plans through Collaborative Platform ‘ePLANETe’. For detailed interpretation, see Fig. 11.

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KerDST Typology of Deliberation Processes with the “KERDST” Deliberation Support Tool  © KerBabel™ C3ED (2006)		ROLES OF THE INDICATORS FOR EVALUATION	
		NO INDICATORS “Colouring in the Cells” (with or without commentary For each Cell, a single judgement (by colour) is registered for each stakeholder category (via discussion or expertise)	WITH INDICATORS The judgement for each Cell of the Matrix is informed by a “Basket of Indicators”. The colour of the Cell depends on the signification and relative weighting accredited to every indicator to the ‘basket’
COMMUNITY OF ACTORS: USER	<b>CLOSED</b> For the extended community, the deliberation is not open A single (synthetic) judgement is registered for each actor/stakeholder category [2]	A. QUALITATIVE ASSESSMENT (Multi- stakeholder AND Multi- criteria)	C. NON- PARTICIPATORY INDICATOR BASED ASSESSMENT
	<b>OPEN</b> An extended user community. Multiple participants within each stakeholder category may contribute to the evaluation [1], [2]	B. QUALITATIVE MULTI-ACTOR PARTICIPATORY ASSESSMENT (WITHOUT INDICATORS)	D. MULTI-ACTOR PARTICIPATORY INDICATOR-BASED ASSESSMENT

Fig. 6 kerDST Users [1]

Fig. 7 Layout of Indicators baskets in online ‘ePLANETE’ Deliberation Matrix [13]

Object to compare (research/means) /issue 1			
Indicators	Value	Subjective Weight	Comment
Indicator 1 <sup>2</sup>		15%	Lié au transport routier /Linked to road transport
Indicator 2		15%	DCO < 125 mg/l
Indicator 3		15%	Diversité des espèces
Indicator 4 <sup>2</sup>		20%	Baisse 10%
Indicator 5 <sup>2</sup>		35%	

Fig. 8 Online Assessment Layout of Object to Compare [1]

	Object to compare 1	Object to compare 2	Object to compare 3	Object to compare 4	Object to compare 5
ISSUE 1					
ISSUE 2					
ISSUE 3					
....					

Fig. 9 Layout of First level of Interpretation [12]

	PERSPECTIVE 1	PERSPECTIVE 2	PERSPECTIVE 3	PERSPECTIVE 4	PERSPECTIVE 5
ISSUE 1					
ISSUE 2					
ISSUE 3					
....					

Fig. 10 Layout of Judgments of First level Interpretation [12]

V.CONCLUSION

A strategic plan required significant involvement, planning, and organizing even though it is a relatively new development in the University that aims to increase efficiency of strategic

plans, self-sufficiency management systems and policies analysis those are thought to be crucial for the advancement of strategic planning. Given this method of plan effectiveness approach, the strategic planning and organizing must foster a development process that is thorough, articulate, and

consultative. The standard roadmaps that are necessary, particularly with regard to university, define strategic action plans, initiatives for implementation, and overall performance assessments of strategic plan effectiveness.

The stakeholders of the university should take advantages constantly using platform-based deliberation matrix as a collaborative tool. In order to effectiveness of the sustainability strategy plan, the paper emphasizes the significance of an integrated approach with a collaborative platform. The paper makes recommendation for universities that can employ collective action method through the proposed multi-stakeholder multi-criteria analysis procedures using the collaborative platform 'ePLANETe's spaces to accommodate this integrated pattern. The paper affirms that recent demand for effectiveness of strategic plans for sustainable university notably influenced the internal strategic

plans of sustainability assessment for strategic competencies by the proper analysis or evaluation process and takes further necessary action for effectiveness strategic plans of university in the vision of collaborative and knowledge sharing platform. The 'ePLANETe' system concept includes a deliberation matrix, and an online assessment system called kerDST that is intended to define analysis and evaluate strategic standards, and university sustainability practices criteria. As per the analysis, the evaluation tools and approach of 'ePLANETe' perfectly fit for the quality analysis and assessment of strategic plans, fill up the gap for sustainability practices, and provide guidelines for effectiveness of strategic plans of the university by the multi-stakeholders' multi-criteria analysis. This helps in maintaining dynamic balance within the university's communities and sustainability practices.

	Education/...	Education/...	Research/M...	Research/O...
Quality Ed..	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Promoting SD	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Transforma..	Switch to edit	Switch to edit	Switch to edit	Switch to edit
SD_Strateg..	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Sustainabl..	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Building c...	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Improving ...	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Green econ..	Switch to edit	Switch to edit	Switch to edit	Switch to edit
Technology..	Switch to edit	Switch to edit	Switch to edit	Switch to edit

Fig. 10 Layout of Auto Analysis of 9 (Nine) Strategic Plans through Collaborative Platform 'ePLANETe' [9]

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